

ARTICULATION AGREEMENT

between

The United Association

**Union of Plumbers, Pipefitters, Sprinkler Fitters,
Steamfitters and Service Technicians**

and

Washtenaw Community College

Associate of Science in Construction Supervision
Associate of Applied Science in Construction Supervision
Associate of Science in Industrial Training
Associate of Applied Science in Industrial Training
Associate of Applied Science in Journeyman Industrial

This agreement is effective as of
September 1, 2025 and until August 31, 2030.

ARTICULATION AGREEMENT

between

The United Association (UA)

Union of Plumbers, Pipefitters, Sprinkler Fitters, Steamfitters and Service Technicians

and

Washtenaw Community College (WCC)

Associate of Science in Construction Supervision
Associate of Applied Science in Construction Supervision
Associate of Science in Industrial Training
Associate of Applied Science in Industrial Training
Associate of Applied Science in Journeyman Industrial

Article I

Agreement on Principle

WCC and the union organization agree that students completing the specified program through the union should be able to transfer credits smoothly, avoiding duplication and loss. Therefore, WCC and the union organization agree to enter into this program articulation agreement, thus ensuring that program completers can transfer to Washtenaw's program efficiently, with both parties cooperating as equal partners to maintain their programs' integrity.

Article II

Agreement of Program Specifics

WCC and the union organization agree that any student who has successfully completed the program may transfer the credits as indicated on the attached Articulation Guide toward the specified degree(s) at WCC. The requirements are:

1. Complete the program through the union organization and apply for admission to WCC.
2. Complete the orientation process and qualify for enrollment in 100 and 200 level courses or participate in appropriate preparatory coursework.
3. Submit a copy of one of the following documents to the Student Connection at WCC to receive transfer credit:
 - a. Department of Labor's Office of Apprenticeship (DOL/OA) Certificate of Completion
 - b. Union organization verification of program completion.
4. Complete the WCC academic program and graduation requirements as specified on the Articulation Guide and in the WCC Bulletin.
5. Apply for graduation.

Article III
Agreement on Communication

The union organization and WCC agree to cooperate in communicating with each other and with their common and respective publics concerning the established relationship between the two institutions.

Communication may include the development of various kinds of publications to inform those who might benefit personally or professionally from this agreement. Faculty and staff at both institutions will share the information in this agreement with interested and qualified students and both institutions will provide counseling and advising to students and prospective students.

Article IV
Maintenance and Review Body and Procedures

At least one administrative or faculty member from each institution will be appointed to act as agents for the implementation of this agreement and to communicate changes to respective faculty members, advisors, counselors, and others to whom the information is pertinent. WCC and the union organization agree to communicate annually any curriculum changes in their respective programs that may affect this articulation agreement and to review the agreement for revision and possible renewal during the fifth year.

ARTICULATION AGREEMENT
between
The United Association Service Technicians (UAE)

and

Washtenaw Community College
Associate of Science in Construction Supervision
Associate of Applied Science in Construction Supervision
Associate of Science in Industrial Training
Associate of Applied Science in Industrial Training
Associate of Applied Science in Journeyman Industrial

ARTICULATION GUIDE

Description	WCC Credits
<p>UAE 140 Introduction to HVACR Service Technician Practices This course is the introduction to HVACR for new apprentices. Course topics include the heritage program, use and care of tools, pipe, fittings, valves, supports and fasteners and job safety and health. Related safety is covered in all topics.</p>	Credit Hours: 3
<p>UAE 142 Soldering and Brazing This course is the introduction to HVACR for new apprentices. Course topics include the heritage program, use and care of tools, pipe, fittings, valves, supports and fasteners and job safety and health. Related safety is covered in all topics. Limited to United Association students.</p>	Credit Hours: 3
<p>UAE 144 Refrigeration This is the introductory refrigeration course. Topics include basic physics, basic electricity, and the basic refrigeration cycle of reciprocal, centrifugal, rotary, screw and absorption systems. Control and sequence of operation of the above systems is included. Introduction to environmental impact of refrigerant handling is included. Related safety is covered in each topic.</p>	Credit Hours: 2
<p>UAE 146 Air Conditioning This course covers air conditioning systems, installation and service. Topics include: psychrometric properties of air, building heating and cooling load calculations, control applications, energy conservation and heat recovery, in addition to a review of basic science.</p>	Credit Hours: 2
<p>UAE 148 Electrical Controls The purpose of this course is to teach fundamental theory and operation of electric/electronic controls used in starting, stopping and cycling electro-mechanical equipment encountered in the HVACR field. Related safety is included in each topic.</p>	Credit Hours: 2
<p>UAE 150 DC Electronics This course covers the fundamentals of direct current applications in control theory and basic electronics.</p>	Credit Hours: 2
<p>UAE 152 Advanced Electrical Controls and Pneumatic Controls The pneumatic controls portion of the course is a presentation of basic</p>	Credit Hours: 3

pneumatic control principles. Theory of operation, basic principles and troubleshooting are included. Related safety is included in each topic.	
<p>UAE 154 Advanced Air Conditioning and Refrigeration</p> <p>This course presents special topics in air conditioning and refrigeration. Topics may include introduction to building automation, load calculations, duct sizing, Universal CFC certification and air distribution.</p>	Credit Hours: 3
<p>UAE 156 Air and Water Balancing and Motor Alignment</p> <p>This course covers principals of balancing forced air systems, balancing flow in hydronic loops, pumps, principles of alignment and vibration elimination.</p>	Credit Hours: 3
<p>UAE 158 Advanced HVACR Practices</p> <p>Special topics covered in this course may include advanced building automation, leadership/supervision, customer relations, importance of clear and concise reporting (work orders) and safety.</p>	Credit Hours: 3
UAE 300 Service Technicians Electives	Credit Hours: 13

ARTICULATION AGREEMENT
between
The United Association Pipefitters (UAF)

and

Washtenaw Community College
Associate of Science in Construction Supervision
Associate of Applied Science in Construction Supervision
Associate of Science in Industrial Training
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ARTICULATION GUIDE

Description	WCC Credits
<p>UAF 102 Introduction to Arc Welding, Soldering, and Brazing This is the introductory course in welding, soldering and brazing. Topics include: safety in welding, cutting and allied processes, oxyacetylene cutting and welding, procedure for setting up oxy-fuel cutting and welding equipment. Related safety is covered in all topics.</p>	Credit Hours: 3
<p>UAF 120 Introduction to Pipefitter Practices This course is the introduction to pipefitting for new apprentices. Course topics include the heritage program, use and care of tools, pipe, fittings, valves, supports and fasteners, job safety and health and soldering and brazing. Related safety is covered in all topics.</p>	Credit Hours: 3
<p>UAF 122 Drawing Interpretation and Plan Reading This is an introductory course in drawing and reading blueprints. Course topics include: Introduction to basic drawing tools, measuring tools, lettering skills, three-view, plan view, elevation view drawings, graphic symbols for pipe fittings and valves, interpretation of technical diagrams, piping drawings, and interpretation of building plans and building specifications.</p>	Credit Hours: 2
<p>UAF 124 Oxy Fuel Cutting and Shielded Arc Welding This is an intermediate course in shielded metal-arc oxy-fuel cutting and welding leading to certification.</p>	Credit Hours: 2
<p>UAF 126 Hydronic Heating and Steam Systems This course is concerned primarily with the technical aspects of design and installation of several types of hydronic systems found in the pipe trades. Topics also include information concerning the installation of high-efficiency heating and cooling systems, low and high temperature, radiant heat and solar hot water heating systems. The steam system portion of the course includes: generating steam, installing steam piping and accessories and troubleshooting all types of steam systems.</p>	Credit Hours: 2
<p>UAF 128 Refrigeration and Electric Controls This course covers the basic principles of air conditioning and refrigeration. The basic components of the refrigeration cycle are identified. Topics include operation and proper installation of the devices and equipment</p>	Credit Hours: 2

required to control the flow of refrigerant in air conditioning and refrigeration systems.	
<p>UAF 130 Advanced SMAW Welding This advanced Shielded Metal-Arc Welding course leads to shielded metal-arc welding certification.</p>	Credit Hours: 3
<p>UAF 132 Advanced Pipefitter Topics This course covers special topics for pipefitters. Topics may include customer relations, appearance and on-the-job conduct, and effective leadership/supervision. Related safety is included in all topics.</p>	Credit Hours: 3
<p>UAF 134 Controls and Instrumentation The purpose of this course is to teach the fundamentals of basic electricity and the fundamentals of electrical controls found in mechanical equipment installations such as air conditioning, heating, fuel burning, water heating and refrigeration. Safety is stressed.</p>	Credit Hours: 3
<p>UAF 136 GTAW Welding The Gas Tungsten Arc Welding (GTAW) process provides a method of joining difficult-to-weld metals. This course shows how this process has been adapted to the welding of carbon steel and stainless steel pipe. The course covers equipment, shielding gases, tungsten electrodes, etc. along with safe work practices unique to this type of welding.</p>	Credit Hours: 3
UAF 300 Pipefitters Electives	Credit Hours: 13

ARTICULATION AGREEMENT
between
The United Association Plumbers (UAP)

and

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ARTICULATION GUIDE

Description	WCC Credits
<p>UAP 100 Introduction to Plumbing Practices This course is the introduction to plumbing for new apprentices. Course topics include the heritage program, use and care of tools, pipe, fittings, valves, supports and fasteners, job safety and health, and soldering and brazing. Related safety is covered in all topics.</p>	Credit Hours: 3
<p>UAP 102 Introduction to Arc Welding, Soldering and Brazing This is the introductory course in welding, soldering and brazing. Topics include: safety in welding, cutting and allied processes, oxyacetylene cutting and welding, procedure for setting up oxy-fuel cutting and welding equipment. Related safety is covered in all topics.</p>	Credit Hours: 3
<p>UAP 104 Drawing Interpretation and Plan Reading This is an introductory course in drawing and reading blueprints. Course topics include: introduction to basic drawing tools, measuring tools, lettering skills, three-view, plan view, elevation view drawings, graphic symbols for pipe fittings and valves, interpretation of technical diagrams, piping drawings and interpretation of building plans and building specifications.</p>	Credit Hours: 2
<p>UAP 106 Oxy Fuel Cutting and Shielded Arc Welding All phases of welding are covered in this course beginning with oxyacetylene and oxy-fuel cutting and welding progressing through shielded metal-arc welding test procedures. Topics include tools, equipment, types of rod, weld positions, proper gaps, bevels and the various types of lap and butt joints. Safety is stressed throughout.</p>	Credit Hours: 2
<p>UAP 108 Water Supply and Drainage Water supply topics include: water treatment, water mains and services, building water supply systems and hot water supply. The course provides a detailed description of the purpose and function of the various components of a water supply system. The drainage portion of this course presents the various types of drainage systems installed and maintained by pipe trades journeyworkers. The course includes: sewage disposal, sewers and drains, building drainage systems, the plumbing trap and venting the drainage system.</p>	Credit Hours: 2

<p>UAP 110 Customer Service Techniques</p> <p>This training encompasses all aspects of customer service. Topics include customer relations, appearance and on-the-job conduct.</p>	Credit Hours: 2
<p>UAP 112 Plumbing Fixtures and Appliances</p> <p>This course presents the handling and installation of the various types of plumbing fixtures and appliances including information on accessories and fixture controls (flushmeters, faucets, etc).</p>	Credit Hours: 3
<p>UAP 114 Plumbing Codes and Regulations</p> <p>This course covers plumbing code construction, general use of codes and code application. Appropriate state, local, or provincial codes are reviewed.</p>	Credit Hours: 3
<p>UAP 116 Medical Gas and Backflow Prevention Techniques</p> <p>This course provides introduction to the concepts and procedures of Medical Gas installation. Topics include certification procedures and requirements for installers of medical gas systems, including brazer qualification. This course also presents the importance of backflow prevention and the dangers of cross connections. Topics include guidelines for acceptable testing practices, annual inspection and repair, and maintenance of backflow prevention assemblies used in modern plumbing installations.</p>	Credit Hours: 3
<p>UAP 118 Advanced Plumbing Practices</p> <p>This course addresses advanced plumbing practices including supervision/leadership, pipe systems design and advanced drawing procedures.</p>	Credit Hours: 3
UAP 300 Plumbing Electives	Credit Hours: 13

ARTICULATION AGREEMENT
between
The United Association Sprinkler Fitters (UAR)

and

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Associate of Science in Industrial Training
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Associate of Applied Science in Journeyman Industrial
Certificate in Construction Supervision

ARTICULATION GUIDE

Description	WCC Credits
<p>UAR 160 Introduction to Sprinkler Fitter Practices This course covers introductory topics for new Sprinkler fitter apprentices including: job safety and health, heritage in the pipe trades, and use and care of tools.</p>	Credit Hours: 3
<p>UAR 162 Basic Drawing and Introduction to Automatic Sprinklers Basic drawing covers preparation of working drawings including orthographic projection, dimensioning, illustrating pipe threads, section views and isometric drawings. Introduction to Automatic Sprinklers includes the fundamentals of sprinkler protection and the standards governing systems. Topics also include the hazard categories specified in NFPA 13, wet and dry systems, flushing sprinkler systems and the fundamentals of inspecting and testing systems.</p>	Credit Hours: 3
<p>UAR 164 Reading Automatic Sprinkler Piping Drawings This course familiarizes the student with the drawings most often found in the sprinkler trade. Topics include standard sprinkler system drawings, common symbols and abbreviations found on the drawings.</p> <p>UAR 164R Reading Residential Blueprints for Sprinkler Systems This course familiarizes the student with the drawings most often found in the residential sprinkler trade. Topics include the standard drawings used by residential sprinkler fitters and abbreviations and symbols found on those drawings.</p>	Credit Hours: 2
<p>UAR 166 Installation of Sprinkler Systems This course covers the installation regulations governing fire protection systems, which includes design, installation and testing. Other topics include the regulations with respect to piping, fittings and other appurtenances for fire protection systems.</p> <p>UAR 166R Installation of Residential Fire Sprinkler Systems This course presents the detailed rules and regulations governing the design, installation and testing of automatic fire sprinkler systems. This course emphasizes the rules that sprinkler fitters must satisfy on the job and also</p>	Credit Hours: 2

explains the principles of older, existing systems. This course references the NFPA code manuals.	
<p>UAR 168 Architectural Working Drawings and Blueprint Reading for Sprinkler Fitters</p> <p>Architectural Working Drawings and Blueprint Reading covers reading the types of prints found in a complete set of working drawings. The course includes correcting or compensating for inconsistencies found in drawings.</p>	Credit Hours: 2
<p>UAR 170 Sprinkler Water Supply and The Automatic Sprinkler</p> <p>The Automatic Sprinkler portion of the course includes how sprinklers operate, regulations applicable to sprinklers, recognizing and installing the proper sprinkler, modifying sprinklers to address specific needs. The Water Supply portion of this course addresses water supply requirements for sprinkler systems. Topics include the relationship of occupancy classifications to water supply requirements, the installation of fire service mains, pumps, controllers, and tanks.</p> <p>UAR 170R The Residential Automatic Fire Sprinkler</p> <p>This course covers the various types of automatic fire sprinklers including their similarities and differences. Particular emphasis is placed on the selection of the proper sprinkler and the regulations covering the use of diverse types of heads. This course references current NFPA code books.</p>	Credit Hours: 2
<p>UAR 172 Types of Fire Protection Systems and Alarms</p> <p>This course covers various types of fire protection systems which include wet pipe and anti freeze systems. Topics include the design principles, specification, installation and operation of fire protection systems.</p>	Credit Hours: 3
<p>UAR 174 Special Application Sprinkler Systems and Hydraulics</p> <p>The Special Application Sprinkler Systems course addresses a wide range of systems found in the field. The course covers: latch clapper and differential type valves, pilot line systems and preaction systems. The hydraulics portion of the course covers pressure, total force, specific gravity/density, pressure generation, flow rate, sprinkler system design, pressure loss and calculated systems.</p>	Credit Hours: 3
<p>UAR 176 Human Relations</p> <p>This course is an overview of the most important aspects of the role of foreman. Topics include the primary duties of the foreman, understanding what it takes to work well with others, and communicating effectively with others.</p>	Credit Hours: 3
<p>UAR 178 Technical Writing</p> <p>Technical Writing covers the basic reports and forms used in the fire protection industry. Topics include specific instructions on how to complete reports and forms in a manner acceptable to others in the fire protection industry.</p>	Credit Hours: 3
UAR 300 Sprinkler Fitters Electives	Credit Hours: 13

ARTICULATING CREDITS

Apprenticeship credits (table above)	26 credits
UA Electives	13 credits
General Education earned through apprenticeship program:	
APP 113	3 credits
SCI 102	3 credits
Total:	45 credits