Texas Higher Education
COORDINATING BOARD

Crosswalks Linking

Apprenticeship Training and Workforce Courses

How to Use an Apprenticeship Crosswalk

Apprenticeship Crosswalks have been developed to help Texas community colleges, employers, and training organizations work together to assure college credit for individuals who have completed a registered apprenticeship program. Crosswalks were designed using Work Plans approved by the Department of Labor (DOL) for specific industry sectors. Work Plans were cross-walked with courses in the Texas Higher Education Coordinating Board's Workforce Education Course Manual (WECM) by teams of community college faculty and industry-specific subject matter experts.

Underlying Assumptions

1. The crosswalks are designed to encourage and help colleges to be more efficient and consistent when developing a Memorandum of Understanding (MOU) and/or partnership with DOL-registered apprenticeship programs in Texas.
2. The crosswalks are designed to be used when an individual who has completed an apprenticeship requests transferability.
3. The crosswalks can assist a community college and an industry partner in determining what courses can be used when the industry partner wants the college to offer its program's Related Training Instruction.
4. The crosswalks are applicable only when a community college offers those courses/programs.
5. The community college follows its own policies and procedures regarding transfer of credit or credit for prior learning.
6. The community college decides which courses in a program will transfer.

How to Use the Crosswalk

For students who complete an apprenticeship and want to pursue a community college certificate or degree:

1. Student takes a copy of the certification of completion for an apprenticeship to a community college that has an MOU with the student's registered apprenticeship organization. The student may also take the certificate of completion to any other community college in Texas that offers a program of study that is the same as the completed apprenticeship.
2. Student visits with appropriate community college personnel to determine which courses the student can receive credit for, based on the completed apprenticeship.
3. College procedures and policies dictate which courses the student may receive credit for.

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For Community Colleges that have a program for which a crosswalk has been developed:

1. College can use the crosswalk to develop a relationship with a registered apprenticeship program that provides its own classroom training and, subsequently, write an MOU defining specific courses for which the apprentice may receive college credit upon completion of the apprenticeship.
2. College can use the crosswalk to determine for which courses an individual may receive credit upon completion of an apprenticeship in a particular field. This does not depend on the college having an MOU with the training organization with which the individual completed the apprenticeship.

For Registered Apprenticeship Organizations that provide their own classroom training:

Registered apprenticeship organizations should work with a community college to develop a pathway through which their apprentices can move from an apprenticeship to the community college to earn an associate degree and, possibly, further postsecondary education.

Boilermaker

	Shop Safety and Procedures	Boiler Maintenenace	Boiler Operations	Introduction to Burner and Boiler Controls	Boilers-Operations, Installation and Maintenance	Water Distribution	Logistics	Testing and Inspections Systems	Workplace Safety	Pipefitting Advanced Fabrication and Installation	Advanced Hydraulics	Fuel Systems	Basic Fluid Power	Measurement and Process Control Theory	Industrial Mathematics	Precision Tools and Measurement	Commercial/Industrial Blueprint Reading	Introduction to Technical Writing	Applied General Chemistry	Mechnical, Plumbing and Electrical Systems in Construction II	Applied Physics	Introduction to Environmental Science	Basic Waterworks Operation	Pipefitting for Process Technicians	Occupational Safety and Health Act
	DEMR 1001, 1301, 1401	CBFM 1003, 1303	CBFM 1007, 1307, 1407	INTC 1020	SEST 1041, 1441	EPTC 2020	INMT 1036, 1336, 1446	QCTC 1046, 1346	OSHT 1003	PFPB 2033, 2333	HYDR 2459	DEMR 1013, 1313, 1413	ELMT 1005, 1305, 1405	INCR 1342, 1442	TECM 1001, 1301, 1401	MCHN 1020, 1320	CNBT 2010, 2310, 2410	ETWR 1002, 1302	SCIT 1014, 1314, 1414	CNBT 2040, 2340, 2440	SCIT 1318, 1418	EPTC 1011, 1211, 1311	EPTC 1027, 1327	PFPB 1030, 1238, 1338	OSHT 1005, 1305, 1405
Skills																									
Safety Equipment Usage	x	x	x	x	x				x																
Safety Techniques and Practices	x	x	x	x	x				x																
Steam Generation	x		x		x					x															
Preparing Boiler	x		x		x																				
Boiler Lighting Off	x				x																				
Boiler Load Operation	x		x		x					x															
Boiler Shutdown	x		x		x																				
Operating and Maintenance of High Pressure Steam Drain	x	x			x					x															
Maintenance of Fuel Oil System from Supply System	x	x			x						x														
Maintenance of Burner Air Supply System	x	x			x																				
Operation, Inspection & Test	x		x		x			x																	
Operation and Maintenance of Atomizer and Sprayer Plates	x	x	x		x																				
Receiving Fuel Oil from Vendor	x	x			x		x				x														
Operation and Maintenance of Boiler Fuel System	x		x		x						x														
Operation and Maintenance of Feed Water System	x		x		x	x																			
Pump Operations	x				x	x																			
Feedwater Flow Control	x		x		x	x				x			x												
Treatment and Problem Solving of Water and Impurities	x		x		x	x																			
Controller Measuring Elements	x				x																				
Control System Operation	x		x		x							x	x												
Emergency Shutdowns	x		x		x																				
Situations Not Requiring Emergency Shutdown	x			x	x																				
Maintenance of Interlocks, Automatic Devices and Alarms	x	x			x					x															
Operation, Inspection and Maintenance	x		x	x	x			x						x											
Operation, Inspection and Maintenance of Steam Turbines	x		x	x	x	x		x						x					x						
Operation, Inspection, Calibration and Maintenance of Instruments	x	x	x		x			x						x		x			x						
Safety Precautions	x								x																
Practical Applications	x	x	x	x	x	x	x	x	x	x	x	x	x	x											
Prelubricated and Sealed Units	x			x	x			x		x	x			x											
Inspections								x																	
Installations	x			x	x					x															

Practical Arithmetic															x											
Basic Algebra															x											
Plane Geometry															x											
Trigonometry															x											
Blueprint Reading																	x									
Elementary Architectural Drawing																	x									
Drawing and Sketching																	x									
Specification Writing																		x								
Trade Chemistry																			x							
Planning a Heating System																				x						
Physics																					x					
Ecology																						x	x			
Water Treatment						x					x											x	x			
Hot Water Piping Systems			x			x				x	x													x		
Types of Pipes and Fittings										x														x		
Valves, Regulators & Fittings		x			x					x			x	x												
Occupational Safety and Health Act	x								x																	x

CARPENTER

	Introduction to Carpentry CRPT 1029, 1429	Introduction to the Construction Industry CNBT 1001,1201, 1301	Construction Methods & Materials I CNBT 1011,1311, 1411	Construction Methods & Materials II CNBT 2004,2304, 2404	Construction Tools & Techniques CNBT 1018,1318, 1418	Residential & Light Commercial Blueprint Reading CNBT 1000,1300, 1400	Concrete I CNBT 1013,1313, 1413	Concrete II CNBT 1049,1349, 1449	Field Engineering CNBT 1015,1315, 1415	Construction Technology I CNBT 1016,1316, 1416	Construction Technology II CNBT 1050,1350, 1450	Roof Systems CRPT 1011,1311, 1411	Wall Systems CRPT 1015,1315, 1415	Floor Systems CRPT 1023,1323, 1423	Forms & Foundations I CRPT 1025,1325, 1425	Forms & Foundations II CRPT 1049,1449	Exterior Finish Systems CRPT 1041,1341, 1441	Construction Technology III CNBT 1053,1353, 1453	Construction Technology IV CNBT 2039,2339, 2459	Fundamentals of Residential Building Science RBPT 1300,1400	Interior Finish Systems CRPT 1045,1345, 1445	Industrial Scaffolding & Rigging CBFM 1021,1221, 1321	Stairs CRPT 2047,2447	Introduction to Welding WLDG 1000,1200	Industrial Mathematics TECM 1001,1301, 1401	Technical Calculations TECM 1303,1403	Technical Trigonometry TECM 1017,1317	Technical Algebra TECM 1041,1341	Technical Algebra & Trigonometry TECM 1343	Technical Math Applications TECM 1049	Green Building CNBT 2017,2317, 2417	Commerical/Industrial Blueprint Reading CNBT 2010,2310, 2410	Special Topics in Construction/Buidling Technology/Technician CNBT 1091,1191, 1291,1391, 1491	Basic Construction Safety CNBT 1010,1110, 1210
Skills																																		
Math	x		x	x		x	x	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
Science	x	x	x	x			x	x	x	x	x	x					x			x			x			x					x		x
Shop	x	x	x	x	x	x	x	x		x	x				x	x	x			x		x	x	x							x		x
Drawing		x	x			x	x	x			x	x	x	x	x		x	x	x	x		x							x				x
Safety	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Basic Carpentry	x		x	x	x	x	x	x	x				x	x	x	x	x	x			x													
Use of Carpentry Tools	x		x	x	x		x	x	x	x	x		x	x	x	x	x			x	x		x											
Woodworker Machine				x	x					x	x																							
Layout & Planning	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x			x	x		x							x	x		x
Construction & Installation Building			x	x		x			x	x	x	x	x	x	x	x	x	x	x				x											
Machine Footings & Forms						x	x	x		x	x				x	x		x	x															
Production Equipment										x	x							x	x															
Office Construction			x	x		x			x	x	x		x					x	x												x			
Maintenance & Repair Buildings							x	x	x	x	x							x	x												x			
Advanced Carpentry					x	x			x			x									x		x											
Special Furniture (desk, tables, etc.)					x																x		x											
Safety Instruction	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Concrete Workers

	Basic Concrete Work (Archived) MBST 1001	Concrete 1 (archived) CNBT 1013	Concrete Residential CNBT 1313	Concrete I CNBT 1413	Concrete II CNBT 1049, 1349	Concrete - Commercial and Industrial CNBT 1449	Field Engineering I CNBT 1015, 1315, 1415	Residential & Light Commercial Blueprint Reading CNBT 1000, 1300, 1400	Basic Construction Safety CNBT 1010, 1110, 1210	Contrucction Methods & Materails (Archived) CNBT 1011, 1211, 1311, 1411	Construction Technology 1 CNBT 1016, 1316, 1416, 1516	Commercial/Industrial Blueprint Reading CNBT 2010, 2310, 2410	Constriction Tools and Techniques CNBT 1018, 1318, 1418	Introduction to Carpentry CRPT 1029, 1329, 1429
Skills														
Safety and Good Work Habits	x	x	x	x	x	x			x	x	x		x	x
Learning to Set Screeds and Layout Work		x	x	x	x	x	x			x	x	x		x
Learning Proper Mix and Consistency	x	x	x	x						x				x
Pouring and Tamping Concrete					x	x				x				
Using Vibrating Machine		x	x	x	x	x				x	x		x	
Rough Finishing, Hand or Machine; Floating	x	x	x	x	x	x							x	
Floating hand Troweling to Smooth Finish	x	x	x	x	x	x							x	
Patching, Hand Rubbing	x	x	x	x	x	x				x			x	
Marking and Edging					x	x						x	x	
Protecting Newly Poured and Laid Concrete from Weather, Rain, Sun, Wind		x	x	x	x	x				x				
Basic Safety	x	x	x	x	x	x	x		x	x	x		x	x
Introduction to Construction Math	x	x	x	x	x	x	x	x				x		x
Introduction to Hand Tools	x	x	x	x			x		x		x	x	x	x
Introduction to Power Tools	x	x	x	x					x		x		x	x
Introduction to Blueprints	x	x	x	x	x	x	x	x		x	x	x		x
Basic Rigging		x	x	x	x	x			x	x	x		x	x
Introduction to Concrete Construction and Finishing	x				x	x	x	x				x		x
Properties of Concrete	x									x				
Preparing for Placement		x	x	x	x	x			x	x	x			
Placing Concrete		x	x	x	x	x				x	x			

Finishing: Part 1		x	x	x	x	x		x						
Curing and Protecting Concrete					x	x								
Introduction to Troubleshooting	x	x	x	x			x							x
Properties of Concrete: Part Two					x	x								
Estimating Concrete Quantities							x				x	x		x
Forming		x	x	x	x	x				x	x	x		
Site Concrete			x	x	x	x		x		x	x	x		
Architectural Finishes	x	x	x	x	x	x		x		x		x		
Industrial Floors		x	x	x	x	x		x		x		x		
Super Flat Floors					x	x	x			x	x	x		
Surface Treatments	x							x		x	x	x		x
Quality Control	x	x	x	x	x	x	x	x		x	x	x		x
Making Repairs							x			x				x

Diesel Workers	*Introduction to Shop Safety and Tools*	*Shop Safety and Procedures*	*Basic Electrical Systems*	*Diesel Engine I*	*Diesel Engine Testing and Repair I*	*Fuel Systems*	*Fundamentals of Brake Systems*	*Basic Hydraulics*	*Basic Brake Systems*	*Power Train I*	*HVAC Troubleshooting*	*Small Air Colled Engines*	*Tractor Trailer Service & Repair*	*Preventative Maintenance*	*Steering and Suspension I & II*	*Automatic Power Shift and Hyrostatic Transmissions I & II*	*Hydraulics/Fluid Exam Preparation*	*Diesel Engine II*	*State Inspection Diesel Engine Mechanic & Repairer*	*Basic Driving Skills*	*Power Train Application I & II*	*Basic HVAC*	*Diesel Engine Testing & Repair II*	*Advanced Brake Systems*	*Electronic Controls*	*Advanced Diesel Tune Up & Troubleshooting*	*Advanced Hydraulics*	*Advanced Power Applications I*	*Advanced Electrical Systems*	*Advanced HAVC*	*Failure Analysis*	*Power Train Applications II*	*Advanced Power Applic...*
	DEMR 1000,	DEMR 1001,1301, 1401	DEMR 1105, 1305,1405	DEMR 1006, 1306, 1406	DEMR 1010, 1310, 1410	DEMR 1013, 1313, 1413	DEMR 1015,	DEMR 1016, 1316, 1416	DEMR 1017, 1317, 1417	DEMR 1021, 1321, 1421	DEMR 1023, 1323, 1423	DEMR 1025, 1225	DEMR 1027, 1327, 1427	DEMR 1029, 1229, 1329,	DEMR 1030, 1230, 1330, 1240	DEMR 1035, 1335, 1435	DEMR 1039	DEMR 1049, 1349, 1449	DEMR 1091, 1191, 1291, 1391, 1491	DEMR 1003, 1303	DEMR 1342, 1347, 2044, 2344, 2444	DEMR 2005,	DEMR 2012, 2312, 2412	DEMR 2031, 2331, 2431	DEMR 2032, 2332, 2432	DEMR 2034, 2334, 2434	DEMR 2024, 2324, 2425, 2435	DEMR 2338, 2438	DEMR 2039, 2339, 2439	DEMR 2346,	DEMR 2348,	DEMR 2445,	DEMR 2440	
Skills																																
OSHA Safety/ Shop Safety	x	x																														
Basic Engine Repair				x	x													x					x		x	x						
Diesel Compression I					x																		x									
Fuel and Ignition Systems						x																	x			x						
Diesel Compression II				x	x													x					x									
Valves System				x	x																		x									
Basic Electricity			x																										x			
Heating, Cooling and Air Conditioning											x											x								x		
Charging and Starting Systems																													x			
State Inspection																			x													
Engine				x	x													x					x			x						
Fuel Systems				x	x	x												x					x			x						
Ignition				x	x													x					x			x				x		
Diesel Engines Overhaul				x	x													x					x									
Cooling Systems										x												x										
Preventative Maintenance														x																		
* = TECM 1X01 TO 1X49 or higher OR MATH 1314 or higher																																
RED FONT = NO CROSSWALK TO APPRENTICESHIP																																

Electrical

	ELPT 1311 *Basic Electricity Theory*	ELPT 1319 *Fundamentals of Electricity I*	OSHT 1321 *Fire Protection Systems*	ELPT 1321 *Introduction to Electrical Safety & Tools*	CNBT 2310 *Commercial/Industrial Blueprint Reading*	ELPT 1325 *National Electrical Code I*	ELPT 2325 *National Electrical II*	ELPT 1320 *Fundamentals of Electricity*	ELPT 1329 *Residential Wiring*	ELPT 1345 *Commercial Wiring*	ELPT 2305 *Motors & Transformers*	ELPT XX80, XX81 *Cooperative Education-Electrical & Power Transmission Install, General*
Skills												
Basic Electrical Mathematics	x	x				x	x	x	x	x	x	
Safety & First Aid	x	x		x				x	x	x	x	
Care & Use of Hand Tools				x								
Care & Use of Power-Operated Tools				x								
Blueprint Reading & Electrical Symbols					x				x	x		
National Electrical Code Requirements	x	x	x	x		x	x		x	x	x	
Electrical Fundamentals & Basic Theory	x	x						x	x	x	x	
Principles of Alternating Current Circuits								x			x	
Principles & Circuitry of Direct Current	x	x									x	
Portable Electric Measuring Devices	x	x		x				x	x	x	x	
Wiring Methods	x	x	x			x	x	x	x	x	x	
Low Voltage Circuits		x	x			x		x				
Appliances					x	x	x					
Interior Distribution					x	x			x	x		
Industrial & Commercial Calculations						x	x			x	x	
Motors & Generator							x	x			x	

Practical Circuit Sketching					x		x		x	x		
Transformers							x			x	x	
Illumination & Design					x	x	x		x	x		
Primary Distribution							x			x	x	
Fundamental of Electronics								x				
Medium Voltage Circuitry						x	x			x	x	

Elevator Operators

	Industrial Electronics	*Introduction to Direct Current Circuits*	*Electric Motors*	*Electrical Work Safety Management for Safety Professionals*	*Industrial Equipment Maintenance*	*Industrial Equipment Maintenance*	*Basic Blueprint Reading*	*Basic Hydraulics*	*Basic Fluid Power I (Hydraulics)*	*Hydraulics Fabrication and Repair*	*Introduction to Shop Safety and Tools*	*Basic Electrical Systems*	*Basic Electrical Theory*	*Industrial Wiring*	*AC/DC Drives*	*Assembly and Rigging*	*Industrial Scaffolding and Rigging*	*Building Maintenance I*	*Mechanical Maintenance*	*Electrical Motors Operation and Maintenance*
	ELMT 2033, 2233, 2433	IEIR 1x02	IEIR 1x06	IEIR 1040	IEIR 1x43	IEIR 1x14	DFTG 1x22	HYDR 1x05	HYDR 1x09	HYDR 1x50	DEMR 1x00	DEMR 1x05	ELPT 1x11	ELPT 1x57	ELPT 2x31	AERM 2x33	CBFM 1x21	CBFM 1x11	CBFM 2x17	ELTN 1046
Skills																				
Elevator History and Basic Safety											x									
Basic Print Reading							x													
Handling Material and Tools											x									
Rigging and Hoisting																x	x			
Pit Equipment																				
Guide Rails																				
Machine Room Equipment																				
Hoistway Equipment																				
General Maintenance Procedures																		x		
Maintenance of Traction Elevators								x											x	
Maintenance of Hydraulic Elevators					x			x											x	
Maintenance of Escalators and Moving Walks								x											x	
Electrical				x								x	x							
Motor Control and Fault Finding																				x
Hydraulic and Installation									x											
Basic Electronics and Solid State	x																			
Machinery Troubleshooting/Repair	x									x										
Electrical Theory			x			x														
AC & DC Motors, Generators and Motor Control		x				x									x					
Elevator Related Circuits and Basic Circuit Analysis	x																			
Construction Wiring and Equipment														x						

Glazers & Painters

	OSHT 1005	CBPM 1035	CBPM 1012	CBPM 1021	CBPM 1034	CBPM 1045	EPCT 1045	CBPM 1311	CNBT 1300	CNBT 1001	CBNT 2310	CNBT 2339	CBPM 1315	CRPT 1341	CRPT 1345	EPCT 1021	EMSP 1020	EMSP 1021	EMSP 1026	CRPT 1315	FIRT 1329	HRPO 1008	CBPM 2213	BMGT 1406	CNSE 1311	CNSE 1000	WLDG 1015	WLDG 1326	WLDG 1327	CNBT 1004	CNBT 1311
Skills																														
Trade Orientation		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	x	x
OSHA 10-hour	x	x				x	x	x	x	x																					
CPR/First Aid/AED							x										x	x	x												
Construction Fall Protection	x	x		x	x			x		x			x	x	x					x				x	x			x	x	x	
Safety Data Sheets		x		x	x	x	x	x		x			x	x	x	x				x	x		x	x	x		x	x	x	x	x
Standards and Codes			x		x	x	x	x	x	x	x	x	x	x	x	x				x	x		x	x	x		x	x	x	x	x
Print Reading			x	x	x			x	x		x	x	x	x	x	x				x	x		x	x	x		x	x	x	x	x
Green Awareness			x	x	x	x	x	x		x			x	x	x	x				x	x		x	x	x					x	
Diversity Training																						x	x	x							
Material Recognition		x	x		x	x	x	x	x	x	x	x	x	x	x	x				x	x		x	x		x		x	x	x	x
Basic Metal Framing			x		x			x	x			x	x	x	x					x			x	x				x	x	x	x
Doors and Windows			x		x			x	x		x	x	x	x	x					x				x				x	x	x	x
Sealants		x				x	x	x				x	x	x	x	x				x	x			x						x	
Thermal Barriers		x	x		x	x		x				x	x	x						x	x		x	x				x	x	x	x
Glass Handling Safety								x		x			x	x	x								x	x	x					x	x
Glass Cutting								x					x	x	x						x			x							x
Store Front								x	x		x	x	x	x	x					x	x		x	x		x				x	x
Curtain Wall				x				x	x		x	x	x	x	x					x	x		x	x	x	x		x	x	x	x
Door and Door Frames			x		x			x	x		x	x	x	x	x					x			x	x		x				x	x
Exit and Electrical Security								x	x		x	x	x	x	x					x			x	x						x	x
Integrated Photovoltaic						x																									
Custom and Art Glazing																															
Fabrication Skills			x		x	x		x			x	x	x	x	x					x	x		x	x	x	x		x	x	x	x
Insulation			x					x	x		x		x	x	x	x				x	x		x	x						x	
UBC Rigging and Signaler Qualification Certificate				x																				x	x			x	x		
Transit Level/Laser			x		x			x				x	x	x						x	x		x	x				x	x	x	x
Powered Industrial Truck Operator Qualification				x																						x					
Aerial Lift Qualification				x				x					x	x						x	x		x	x		x		x	x	x	x
Light Gage Welding								x					x	x						x	x		x	x			x	x	x	x	
Structural Welding								x					x	x						x	x		x	x			x	x	x	x	
Supervisory Training																						x	x	x							
Advanced Print Reading			x	x				x	x		x	x	x	x	x	x				x	x		x	x				x	x	x	x
Ergonomics		x	x	x	x	x	x	x		x		x	x	x	x	x				x	x		x	x	x	x	x	x	x	x	x

Heavy Equipment Operators

		Heavy Equipment Operators	Tracks and Undercarriages	Natural Gas Compression	ST in Heavy Equipment Maintenance & Repairer	Introduction to Shop Safety	Basic Driving Skills	Basic Electrical	Diesel Engine I	Diesel Engine Testing Repair	Fuel Systems	Power Train I	Heating, Ventilation, and Air Conditioning	Preventative Maintenance	Power Train Application I	Power Train II	Electronic Controls	Power Train Application	Special Topics in Diesel Engine Maintenance and Repair	Material Handling Equipment	Job Site Layout & Development	Forklift Operator Certification	Earth Moving Equipment Operation	Professional Truck Driver I	Professional Truck Driver II	Introduction to Welding Using Multiple Processes	Maintenance Welding	Welding Safety, Tools, and Equipment
		HEMR 1x01	HEMR 1x04	HEMR 1x91	DEMR 1x01	DEMR 1x03	DEMR 1405	DEMR 1x06	DEMR 1x10	DEMR 1x13	DEMR 1X21	DEMR 1x23	DEMR 1X29	DEMR 1x42	DEMR 1x47	DEMR 2332	DEMR 2445	DEMR 1x91	CNSE 1x10	CNSE 1x21	CNSE 1x03	CNSE 1x41	CVOP 1x13	CVOP 1x40	WLDG 1x07	WLDG 1x15	WLDG 1x23
Skills																												
Construction Machinery (Bulldozers, Power Shovels, Graders, Scrapers, Pay Rollers)																					x							
Construction Machinery Equipment (Wenches, Arches Angle, Straight Dozer Blades, Cabs, Hydraulic System)			x							x			x	x		x					x						
Running Gear (Track Chains, Track Rollers, Front Idlers, Top Idlers, Pads, Wheels)																					x							
Power Train Assemblies (for Accessories)						x	x			x			x	x		x												
Gas and Diesel Engines				x		x	x	x	x																			
Troubleshooting				x		x	x	x	x	x			x	x		x												
Carburetor Repairing		x	x	x																								
Graders																					x							
Scarpers, self-propelled																					x							
Compaction Equipment																					x							
Tractor-Type Skip Loaders/Hi-Lifts																		x		x	x							
Wheel-Type Tractors, including Forklifts, Lumber Carriers, etc.																		x		x	x							
Grade Stakes																					x							
Trenching Machines																					x							
Bulldozer																					x							
Scrapers, Towed																					x							
Misc. Equipment																		x		x	x							
Asphalt and Concrete Paver																					x							
Special Paving Equipment																					x							
Maintenance - Cutting and Burning, Grease and Oils				x					x	x		x	x	x		x								x	x	x	x	
Safety		x	x	x		x			x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	

Commercial Drivers License Preparation			x		x					x			x	x		x						x	x				
Hazmat		x	x	x					x			x															
Fuels and Lubricants		x	x	x			x	x	x	x		x	x	x		x											
Health			x	x			x	x	x	x		x	x	x		x								x	x	x	x
Basic Equipment Skills																			x								

HVAC

	EPA Recovery Certification Program	Basic Electricity for HVAC	Air Conditioning Control Principles	Refrigeration Principles	Residential Air Conditioning	Gas & Electric Heating	Air Conditioning Troubleshooting	Air Conditioning Installation & Startup	Residential Air Conditioning Systems Design	Heat Pumps	Commercial Air Conditioning	Commercial Refrigeration	Specialized Commercial Refrigeration	Industrial Air Conditioning	Advanced HVAC for Plumbers/Pipefitters
	HART 1056, 1256, 1356	HART 1001, 1301, 1401	HART 1003, 1303, 1403	HART 1007, 1307, 1407	HART 1041, 1341, 1441	HART 1045, 1345, 1445	HART 2036, 2336, 2436	HART 2038, 2338, 2438	HART 2045, 2345, 2445	HART 2049, 2349, 2449	HART 2014, 2341, 2441	HART 2042, 2342, 2442	HART 2057, 2357, 2457	HART 2043, 2343, 2443	PFPB 2030
Skills															
Basic Safety		x		x											
Introduction to Hand Tools		x		x											
Introduction to Blueprints									x						
Introduction to HVAC				x											
Copper & Plastic Piping Practices								x							
Soldering & Brazing								x							
Basic Electricity		x													
Introduction to Cooling				x	x										
Introduction to Heating			x						x						
Air Distribution Systems									x						
Chimney,Vents & Flues								x							
Alternating Current		x													
Basic Electronics		x	x												
Electric Heating			x			x									
Introduction to Control Circuit Troubleshooting		x	x												
Equipment						x	x								
Metering Devices				x	x										
Compressors			x	x	x										
Heat Pumps										x					
Leak Detection, Evacuation, Recovery & Charging				x	x										
Planned Maintenance															
Troubleshooting Gas Heating						x	x								
Troubleshooting Electric Heating						x	x								
Troubleshooting Cooling				x	x	x	x								
Troubleshooting Heat Pumps							x			x					
Troubleshooting Accessories							x								
Troubleshooting Electronic Controls							x								
Hydronic Healting & Cooling Systems			x		x	x	x			x					
Airside Systems					x	x	x			x					
Air Properties & Balancing				x					x	x					
Advanced Blueprint Reading									x						

Indoor Air Quality					x										
Water Treatment														x	
System Start-up & Shutdown				x											
Heating & Cooling System Design									x						
Commercial & Industrial Refrigeration												x	x		

Ironworkers

	Industrial Scaffolding and Rigging	Craning Principles	Forklift Operator Certification	Introduction to Welding	Fundamentals of Gas Metal Arc Welding (GMAW)	Shielded Metal Arc Welding	Introduction to Oxy-Fuel Welding and Cutting	Introduction to Welding Using Multiple Processes	Introduction to Flux Cored Arc Welding (FCAW)	Introduction to Blueprint Reading for Welders	Introduction to Layout and Fabrication	Welding Fundamentals	Welding Safety, Tools, and Equipment	Introduction to Oxy-Fuel Welding and Cutti	Welding Codes and Standards	Introduction to Shielded Metal Arc Welding (SMAW)	Introduction to Gas Metal Arc Welding (GMAW)	Introduction to Pipe Welding	Introduction to Welding Metallurgy	Intermediate Arc Welding	Pipe Welding	ADVANCED SMAW	ADVANCED GMAW	ADVANCED FCAW	Commercial and Industrial Blueprint Reading	Commercial and Industrial Blueprint Reading	Commercial/Industrial Blueprint Reading	Architectural Blueprint Reading	Construction Tools and Techniques	Safety and Ergonomics	OSHA Regulations - Construction Industry	Construction Site Safety and Health	Material Handling	OSHA Regulations - General Industry	Structural Steel Detailin...
	CBRM 1021, 1221, 1321, 1421	CNSE 1011, 1311, 1411	CNSE 1003	WLDG 1000, 1200	WLDG 1002, 1202	WLDG 1003	WLDG 1005, 1205, 1407	WLDG 1007, 1307, 1407	WLDS 1012, 1312, 1412	WLDG 1013, 1313, 1410	WLDG 1017, 1117, 1417, 1517	WLDS 1021, 1421, 1521	WLDG 1023, 1323, 1423	WLDS 1025, 1425, 1525	WLDG 1027, 1327, 1427	WLDG 1028, 1428, 1528	WLDG 1030, 1430, 1530	WLDG 1035, 1435, 1535	WLDG 1037, 1437, 1437	WLDG 1057, 1457, 1557	WLDG 2053, 2453, 2553	WLDG 2043, 2443, 2543	WLDS 2047, 2447, 2557	WLDG 2052, 2352, 2452	CNBT 1206	CNBT 1007, 1207, 1307, 1407	CNBT 2010, 2110, 2410	DFTG 1015, 1215, 1315	CNBT 2016, 2116, 2216, 2218, 2418	ENTC 1047, 1347, 1447, 1547	OSHT 1005, 1305, 1405, 1505	OSHT 1007, 1307, 1407	OSHT 1016, 1316, 1416	OSHT 2007, 2107, 2207, 2401, 2501	ARCE 1015, 1315, 1415
Skills																																		
Ornamental	x	x		x		x		x				x	x		x	x	x		x	x		x	x		x	x	x	x	x	x	x	x		
Reinforcing		x	x	x		x	x	x				x	x	x	x	x			x	x		x			x	x	x	x	x	x	x	x		
Structural	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x
Welding				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
Structural Steel	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x
Safety	x	x	x	x			x	x	x	x	x	x	x	x		x	x	x		x	x	x	x	x				x	x	x	x	x	x	
Blueprint Reading										x	x														x	x	x	x						x
Fabrication				x	x	x	x		x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Rebar		x	x	x			x					x	x	x	x	x			x	x		x			x	x	x	x	x	x	x	x		
Post Tensioning		x	x				x							x											x	x	x	x	x	x	x	x		
Rigging		x	x																										x	x	x	x		
Crane operating		x																												x	x			
Scaffolding	x																											x	x	x		x		
Forklift			x																											x	x		x		

MACHINIST

	Beginning Machine Shop	Bench Work & Layout	Manufacturing Materials & Processes	Basic Machine Shop I	Basic Machine Shop II	Basic Lathe	Intermediate Lathe Operations	Advanced Machining II	Advanced Machining I	Basic Milling Operations	Intermediate Milling Operations	Grinders, Outside, Internal, Surface	Metals & Heat Treatment	Introduction to Metallurgy	Precision Tools & Measurement	Machine Tool Repair	Machine Shop Mathematics	Print Reading for Machining Trades	Basic Computer-Aided Drafting	Operation of CNC Turning Centers	Operation of CNC Machining Centers	Computerized Numerical Control Programming	Advanced CNC Machining	Fundamentals of Computerized Numerical Controlled (CNC) Machine Controls	Intermediate Machining II	Advanced Milling Operations	Advanced Lathe Operations	Advanced Computer-Aided Manufacturing (CAM)	Introduction to Computer-Aided Manufacturing	Precision Tools and Measurement
	MCHN 1300	MCHN 1032, 1332	MCHN 1019, 1319, 1419	MCHN 1038, 1338, 1438	MCHN 1041, 1341, 1441	MCHN 1008, 1308, 1408	MCHN 1058, 1358, 1458	MCHN 2045, 2345, 2445	MCHN 2041, 2341, 2441	MCHN 1013, 1313, 1413	MCHN 2002, 2302, 2402	MCHN 1035, 1335	MCHN 1005, 1305, 1405	METL 1001, 1301	MCHN 1020, 1320	MCHN 1016, 1416	MCHN 1043, 1343	MCHN 1002, 1302	DFTG 1009, 1309, 1409	MCHN 2031 2231, 2431	MCHN 2034, 2334, 2434	MCHN 2044, 2344, 2444	MCHN 2035, 2335, 2435	MCHN 2003, 2303, 2403	MCHN 1094, 1394, 1404	MCHN 2037, 2437	MCHN 2033, 2333, 2433	MCHN 2038, 2338, 2438	MCHN 1026, 1326, 1426	MCHN 2402
Skills																														
Basic Measurement	x																													
Basics of the Optical Comparator	x																													
Basics of the Manual Mill										x																				
Basics of the Engine Lathe						x																								
Metal Removal Process	x			x	x																									
Safety for Metal Cutting				x	x																									
What is Cutting?	x			x	x																									
Machines for Metal Cutting	x			x	x																									
Cutting Processes	x			x	x																									
Sawing Fundamentals	x			x	x																									
Cutting Variables							x		x		x																			
Cutting Fluids							x		x		x																			
Lockout/Tagout Procedures	x			x	x																									
Hand & Power Tools Safety	x			x	x																									
Metal Working Fluid Safety	x			x	x																									
Math Fundamentals																	x													
Math Fractions & Decimals																	x													
Math Units of Measurement																	x													
Basics of Tolerance																		x												
Blueprint Reading																		x												
Geometry Lines & Angles																	x													
Geometry Triangles																	x													
Shop Geometry Overview																	x													
Shop Algebra Overview																	x													
Computer Aided Engineering																			x											
Mechanics of CNC											x																			
Basics of CNC Turning Center																				x										
Basics of CNC Machining Center																					x									
CNC Coordinates																						x								
CNC Manual Operations																				x	x		x							
CNC Offsets																				x	x		x							
GE Fanuc Mill: Control Panel Overview																								x						
GE Fanuc Mill: Lathe Panel Overview																								x						
GE Fanuc Mill: Entering Offsets																					x		x	x			x			
GEFanuc Lathe: Entering Offsets																					x		x	x						
Overview of Threads						x																								
Overview Manual Mill Setup																														x
Overview Engine Lathe Setup										x																				
Benchwork & Layout Operations		x		x	x																									
Manual Mill Operations								x			x														x	x				
Holemaking on the Mill																									x					x
Threading on the Engine Lathe						x	x																		x	x				
Band Saw Blade Section	x			x	x																									
Tool Geometry	x																													
Milling Geometry								x																	x	x				x
Drill Geometry	x			x	x																									
Shop Trig Overview																	x													
Trig, Sine, Cosine & Tangent																	x													
Interpreting Blueprints	x	x		x	x																				x					
CNC Specs for Mill																					x									
CNC Specs for Lathe																				x										
CNC Controls: GE Fanuc Mill: Locating Program Zero																					x			x						
CNC Controls: GE Fanuc Lathe: Locating Program Zero																				x				x						
CNC Controls: GE Fanuc Mill: Program Execution																					x			x						
CNC Controls: GE Fanuc Lathe: Program Execution																				x				y						
CNC Controls: GE Fanuc Mill: Program Storage																					x		x							

CNC Controls: GE Fanuc Lathe: Program Storage																				x			x								
CNC Controls: GE Fanuc Mill: First Part Runs																					x		x								
CNC Controls: GE Fanuc Lathe: First Part Runs																				x			x								
Inspection Intro to GD&T 200		x																													
Inspection Intro to GD&T 205		x																													
Inspecting with Optical Comparators															x																
Hole Inspection															x																
Thread Inspection															x																
Intro to Materials	x		x																												
Metal Manufacturing	x		x																												
Metal Classification	x		x																												
Ferrous Metals & Alloys													x	x																	
Nonferrous Metals & Alloys													x	x																	
Cutting Tool Materials																										x					
Carbide Grade								x																		x					
Tool Holders for Turning							x																					x			
Speed & Feed Section					x			x																							
CNC Programming & CAM																													x		
CNC Part Program																						x									
CAD/CAM Overview																														x	
Create a Turning Program																				x	x										
Turning Calculations																				x		x									
Create a Milling Program																					x	x									
Milling Calculations																					x	x									
Canned Cycles																				x	x	x									
Interpreting GD&T															x			x													
Trig Sine Bar Applications															x		x														
Mechanical Properties of Metal													x	x																	
Physical Properties of Metal													x	x																	
Overview of Exotic Metals													x	x																	
Intro to EDM	x																									x					
Troubleshooting-Identifying Problems	x																														
Troubleshooting-Taking Corrective Action	x																														
Intro to Workholding	x																														
Supporting & Locating Principles	x																														
Locating Devices	x																														
Clamping Basics	x																														
Chucks, Collets & Vises	x																														
Fixture Body Construction								x																		x					
Fixture Design Basics								x																		x					
Drill Bushing Selections																										x					

MASONRY

	Masonry I MBST 1407	*Masonry II* MBST 1409	*Masonry III* MBST 2407	*Masonry IV* MBST 2409	*Masonry V* MBST 2447	*Masonry VI* MBST 2449
Skills						
Use and maintain equipment and toolsfor the craft, including trowels, levers, rulers, jointers and brick saws	x	x	x	x	x	x
Use masonry terms	x	x	x	x	x	x
Practice math necessary for the craft, including whole numbers, fractions, addition and multiplication	x	x	x	x	x	x
Learn and practice safety guidelines	x	x	x	x	x	x
Practice necessary introductory skills such as spreading mortar, completing a full head joint, hanging a line and using a level	x	x				
Build and brick a clock wall using a level	x	x				
Calculate, mix and spread mortar	x	x				
Understand how modular increments are used to build a building			x	x		
Build a lead in, both block and brick			x	x		
Understand blueprints and building plans, especially structural and architectural plans used in the craft			x	x		
Estimate materials needed based on blueprints			x	x		
Work with speed lead/story pole			x	x		
Pratice different ways to lay bricks			x	x		
Learn different types of joints			x	x		
Lay out a wall					x	x
Build projects to demonstrate mastery of masonry guidelines					x	x
Learn specifics of blueprints including use of various detailed schedules					x	x
Pratice tuck point and brick repair					x	x
Build an arch					x	x
Understand construction of fireplaces and lintels/angle iron					x	x
Understand how state and federal guidelines affect the craft	x					
Learn different façade & finishes and used reinforced mortar		x		x		
Construct piers	x					

MECHATRONICS

	Mechanical Principles in Automated Manufacturing	*Pumps, Compressors & Mechanical Drives*	*Basic Fluid Power*	*Hydraulics & Pneumatics*	*DC Circuits*	*AC Circuits*	*DC-AC Circuits*	*Industrial Electronics*	*Programmable Logic Controllers I*	*Industrial Automation II*	*Automated Manufacturing*	*Programmable Logic Controllers*	*Motor Controls*	*Industrial Automation*	*Robotic Fundamentals*	*Material Handling*
	MFGT 1006, 1406	INMT 2003, 2303	ELMT 1005, 1305, 1405	HYDR 1045, 1345, 1445	CETT 1003, 1303, 1403	CETT 1005, 1305, 1405	CETT 1009, 1409, 1509	ELMT 2033, 2333, 2433	ELPT 2019, 2319, 2419	MFGT 2459	MFGT 1404	RBTC 1001, 1301, 1401	IEIR 1010, 1310, 1410	INMT 1017, 1317, 1417	RBTC 1005, 1305, 1405	OSHT 1016, 1316, 1416
Skills																
Mechanical Drives	x	x	x	x							x			x	x	x
Industrial Belting	x	x	x	x							x			x	x	x
Machinery Alignment	x	x		x										x	x	
Shafts	x	x		x												
Gear Boxes	x	x												x	x	x
Bearings	x	x														
Fluid Power			x	x						x	x			x	x	
Hydraulics										x	x					
Pneumatics	x	x	x	x						x	x					
Compressors		x	x							x	x			x		x
Electrical Systems	x				x			x	x				x	x	x	x
Motorized & PLC Controls								x	x	x						
Robotics & Automation	x								x	x	x		x	x	x	x
Welding	x										x			x	x	x
Machining & CNC	x									x	x			x	x	x
Material Handling											x					x
CAD or Drafting	x									x	x					x
Air Conditioning, Refrigeration Inspection Criteria		x	x	x						x				x	x	x
Troubleshooting	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Safety	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Mechanical Print Reading	x			x	x	x	x	x		x	x	x	x	x	x	x
Hand & Power Tools	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Math	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

MILLWRIGHT

	Millwright I MCHN 1025, 1325, 1425	*Millwright II* MCHN 1029, 1329, 1429	*Millwright III* MCHN 2005, 2305, 2405	*Millwright IV* MCHN 2007, 2307, 2407	*Millwright V* MCHN 2012, 2312, 2412	*Print Reading for Machining Trades* MCHN 1002, 1302	*Fundamentals of Computer Numerical Controlled (CNC) Machine Controls* MCHN 2003, 2303, 2403	*Millwright VI* MCHN 2014, 2314	*Hydraulics & Pneumatics* HYDR 1045, 1345, 1445	*Millwright VII* MCHN 2016, 2316	*Millwright VIII* MCHN 2018, 2318
Skills											
Safety & Accident Prevention	x	x	x	x	x	x		x	x	x	x
Intro to Millwright	x	x									
Math for Trades	x	x	x	x	x	x		x	x	x	x
Blueprint & Layout		x	x	x	x	x			x	x	
Lubrication				x	x			x		x	x
Hydraulics & Pneumatics				x	x			x	x	x	x
Mechanical Drive				x	x			x	x	x	x
Conveyor			x	x	x	x			x		
Machine Align					x			x			
Pump Repair								x	x	x	x
Compressor Fan & Blower									x	x	
Turbine			x	x		x			x	x	x
Bearings					x			x	x	x	x
Welding			x	x		x					
Seals/Mechanical Seals								x	x	x	x
Gear Box								x	x	x	x
Rigging Signal					x	x			x		x
Aerial Lift	x	x	x	x	x			x	x	x	x
PITO	x	x	x	x	x			x	x	x	x
Advanced Optic Alignment				x	x	x		x		x	x

Painters, Industrial Coating & Lining

O*NET SOC Code: 47-2141.00	OSHT 1005	CBFM 1035	CBFM 1021, 1221,13 21	CBFM 1034,12 34,1334	CBFM 1045, 1445	EPCT 1045	CBFM 1011,13 11	CNBT 1300	CNBT 1010,11 10,1210	EPCT 1021	HRPO 1008	CNSE 1000	Hart 1053
	O+B1:X1sha Regulations Construction Industry	*introduction to industrial painting*	*Industrial Scaffolding & Rigging*	*Interior & Exterior & Refinishing*	*Surface Preparation*	*Lead Based Paint Removal*	*Building Maintence I*	*Residential & Light Commercial Blueprint Reading*	*Basic Construction Safety*	*Lead Inspection*	*Diversity in the Workplace*	*Material Handling Equipment*	*Energy Conservation*
Skills													
Orientation													
OSHA Basic Orientation & Training	x								x				
Job Hazard Analysis (JHA) Training and Exercies	x												
Scaffolding Classroom Training/certification/demonstration	x	x	x										
Respiratory Protection/ Fit Testing	x												
Insulation Classroom Training/ Demonstration/Exercise													x
Coatings Classroom Training/ Demonstration/Exercise					x								
Asbestos/Lead/silica Training						x							
Employment Traits needed for success											x		
NCCER Core Credential	x						x	x	x		x	x	
NCCER Painter, Coating & Application Specialist	x			x	x	x	x	x					

PIPEFITTER

Skills	Construction Tools & Techniques (CNBT 1018, 1318, 1418)	Welding Safety, Tools & Equipment (WLDG 1023, 1323, 1423)	Plumbing & Pipefitting Equipment (PFPB 1050, 1350, 1450)	Industrial Mathematics (TECM 1001, 1301, 1401)	Technical Mathematic Applications (TECM 1049, 1349)	Mathematics: Special Topics in Applied Mathematics, General (TECM 1091, 1191, 1291, 1391, 1491)	Applied Physics (SCIT 1318, 1418)	Hydraulics and Pneumatics (HYDR 1045, 1345, 1445)	Field Measuring, Sketching & Layout (PFPB 2349, 2449)	Pipe Fabrication & Installation I (PFPB 2007, 2307, 2407)	Piping Standards & Materials (PFPB 2008, 2308, 2408)	Intermediate Technologies for Piping Trades (PFPB 2015, 2315)	Material Handling (OSHT 1016, 1316, 1416)	OSHA Regulations-Construction Industry (OSHT 1005, 1305, 1405)	Basic Blueprint Reading for Pipefitters (PFPB 1005, 1305, 1405)	Pipefitting Fabrication & Bluepring Reading (PFPB 1043, 1343, 1443)	Intermediate Blueprint Reading for Pipefitters (PFPB 2010, 2310)	Drafting for Specific Occupations (DFTG 1013, 1313, 1413)	Technical Drawing (DFTG 1005, 1305, 1405)	Pipe Drafting (DFTG 2023, 2323, 2423)
Care and Use of Tools & Equipment	x	x	x						x				x							
Mathematics: Fundamentals				x							x							x	x	x
Mathematics: Trade Applications		x	x	x	x	x		x	x			x				x	x	x		x
Physics applied to trade						x	x													
Pneumatics/Hydraulics								x												
Elementary Drawing																			x	
Machine Knowledge																				
Installation & Maintenance of Piping for Air, Gas, Water and High & Low Pressure Steam: Traps, Strainers & Valves			x							x	x					x				
Installation of Additions to and Maintenance of Sanitary System, Water System (Hot & Cold), Sewer System, Heating System Installation and Repair, Wet and Dry Sprinkler System (including alarms)			x							x	x	x				x				
Installation and Maintenance of Piping and Pneumatic Controls for Heat										x		x								
Safety: Fundamentals	x	x											x	x						
Safety: Trade Safety	x	x	x										x	x		x				
Safety: OSHA Regulations		x											x	x						x
Safety: First Aid													x	x						
Fundamentals of Reading & Drawing					x	x			x		x				x	x	x	x	x	x
Plan Reading					x	x			x		x	x			x	x	x	x	x	x
Elementary Drawing						x			x								x	x	x	x
Plan Drawing									x								x	x	x	x
Plumbing Theory			x								x	x						x		x
Terminology	x	x	x		x				x		x				x		x	x	x	x
Welding Theory												x				x		x		x
Low Pressure Boiler																x				
Water Sources										x										
Chemistry Applied to Trade																				
Rigging										x			x			x				
Pipefitting		x								x		x				x				x
Management & Supervision																				

Skills	Basic Computer-Aided Drafting (DFTG 1009, 1309, 1409)	Advanced Pipe Drafting (DFTG 2045, 2345, 2445)	Advanced Technologies in Pipe Design & Drafting (DFTG 2057, 2357, 2457)	Advanced Pipefitting Standards, Specifications & Installations (PFPB 2032, 2332, 2432)	Corrosion Basics (PTRT 1009, 1309, 1409)	Introduction to Pipe Welding (WLDG 1035, 1435, 1535)	Intermediate Pipe Welding (WLDG 2006, 2406, 2506)	Advanced Pipe Welding (WLDG 2053, 2453, 2553)	Advanced Shielded Metal Arc Welding (SMAW) (WLDG 2043, 2443, 2543)	Intro to Shielded Metal Arc Welding (SMAW) (WLDG 1028, 1428, 1528)	Intro to Gas Metal Arc Welding (GMAW) (WLDG 1030, 1430, 1530)	Intro to Gas Tungsten Arc Welding (GTAW) (WLDG 1034, 1434, 1534)	Intro to Welding Metallurgy (WLDG 1037, 1337, 1437)	Orbital Tube Welding (WLDG 2050, 2350, 2450)	Testing, Adjusting & Balancing HVAC Systems (HART 2058, 2358, 2458)	Internal Corrosion Control (METL 2301, 2401)	Introduction to Corrosion (METL 1013, 1313)	Cathodic Protection (METL 2041, 2341, 2441)	Atmospeheric Corrosion Control (METL 2305, 2405)	Plumbing Codes I (PFPB 1323)
Care and Use of Tools & Equipment				x	x	x	x	x	x	x	x	x		x		x		x	x	
Mathematics: Fundamentals		x					x	x							x				x	
Mathematics: Trade Applications		x					x	x	x						x				x	
Physics applied to trade		x						x	x				x			x		x		
Pneumatics/Hydraulics		x													x					
Elementary Drawing															x					
Machine Knowledge		x				x	x	x	x	x	x	x		x	x					
Installation & Maintenance of Piping for Air, Gas, Water and High & Low Pressure Steam: Traps, Strainers & Valves				x											x					
Installation of Additions to and Maintenance of Sanitary System, Water System (Hot & Cold), Sewer System, Heating System Installation and Repair, Wet and Dry Sprinkler System (including alarms)				x																
Installation and Maintenance of Piping and Pneumatic Controls for Heat				x											x					
Safety: Fundamentals					x	x	x	x	x	x	x	x				x	x	x		
Safety: Trade Safety				x	x	x	x	x	x	x	x	x			x	x	x	x		
Safety: OSHA Regulations		x																x		x
Safety: First Aid																				
Fundamentals of Reading & Drawing		x					x	x							x	x		x		
Plan Reading		x		x			x	x												
Elementary Drawing		x													x	x		x		
Plan Drawing		x		x											x	x		x		
Plumbing Theory		x		x																x
Terminology		x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Welding Theory		x		x		x	x		x	x	x	x		x						
Low Pressure Boiler																				
Water Sources																				
Chemistry Applied to Trade					x											x	x	x	x	
Rigging				x																
Pipefitting		x		x				x						x						
Management & Supervision		x																		

Skills	Basic Pipefitting Skills (PFPB 1008, 1308, 1408)	Basic Construction Managament (CNBT 1009, 1309)	Construction Estimating I (CNBT 1046, 1346, 1446)	Mechanical, Plumbing & Electrical Systems in Construction I (CNBT 1002, 1302, 1402)	Mechanical, Plumbing & Electrical Systems in Construction II (CNBT 2040, 2340, 2440)	Advanced HVAC for Plumbers/Pipefitters (PFPB 2030)	Advanced Technolohies & SpecializED Applications for Piping Trades (PFPB 2031)	First Aid (EMSP 1026)	Mechanical Drafting for Plumbing/Pipefitting (PFPB 1035)	Industrial Drafting Applications for Plumbing/Pipefitting (PFPB 2034)	Welding Layout (WLDG 1055)	Mechanics of Plumbing (PFPB 1025)	Basic Plumbing Skills (PFPB 1003)	Pipefitting: Installing of Boilers (PFPB 1041)	Basic Pipefitting: Installation & Rigging (PFPB 1001)	Corrosion Prevention (PTRT 2020)	Plumbing Codes II (PFPB 2057)	Pipefitting for Process Technicians (PFPB 1038)	Workplace Safety (OSHT 1003)
Care and Use of Tools & Equipment	x	x		x									x					x	
Mathematics: Fundamentals	x		x									x	x	x	x			x	
Mathematics: Trade Applications	x		x			x			x	x		x	x	x	x			x	
Physics applied to trade										x		x							
Pneumatics/Hydraulics					x	x	x		x	x		x					x		
Elementary Drawing																			
Machine Knowledge				x	x	x												x	
Installation & Maintenance of Piping for Air, Gas, Water and High & Low Pressure Steam: Traps, Strainers & Valves	x			x	x	x	x						x	x	x		x	x	
Installation of Additions to and Maintenance of Sanitary System, Water System (Hot & Cold), Sewer System, Heating System Installation and Repair, Wet and Dry Sprinkler System (including alarms)				x	x							x	x				x		
Installation and Maintenance of Piping and Pneumatic Controls for Heat					x	x				x		x		x			x		
Safety: Fundamentals	x	x											x	x					
Safety: Trade Safety	x					x	x		x	x			x	x				x	
Safety: OSHA Regulations							x		x	x				x			x		x
Safety: First Aid								x											x
Fundamentals of Reading & Drawing		x	x		x				x	x	x				x				
Plan Reading		x	x		x	x					x				x		x		
Elementary Drawing					x				x	x									
Plan Drawing					x				x	x									
Plumbing Theory				x	x		x		x	x		x	x						
Terminology	x	x	x	x	x							x	x		x	x			x
Welding Theory							x		x	x	x							x	
Low Pressure Boiler																	x		
Water Sources																	x		
Chemistry Applied to Trade												x				x			
Rigging														x	x			x	
Pipefitting							x			x	x			x	x			x	
Management & Supervision		x																	

PLUMBER

	Basic Blueprint Reading for Pipefitters	Basic Blueprint Reading for Plumbers	Basic Pipefitting Skills	Introduction to the Plumbing Trade	Plumbing Maintenance & Repair	Plumbing Codes I	Pipefitting Fabrication & Blueprint Reading	Backflow Prevention	Plumbing & Pipefitting Equipment and Safety	Pipe Fabrication & Installation I	Piping Standards & Materials	Residential Construction Plumbing I	Intermediate Blueprint Reading for Pipefitters	Commercial Construction & Fixture Settin	Pipe Fabrication & Installation II	Residential Construction Plumbing II
	PFPB 1005, 1305, 1405	PFPB 1006, 1306	PFPB 1008, 1308, 1408	PFPB 1013, 1413	PFPB 1021, 1321, 1421	PFPB 1023, 1323	PFPB 1043, 1343, 1443	PFPB 1047, 1247, 1347	PFPB 1050, 1350, 1450	PFPB 2007, 2307, 2407	PFPB 2008, 2308, 2409	PFPB 2009, 2309, 2409	PFPB 2010, 2310	PFPB 2036, 2336, 2436	PFPB 2041, 2341, 2441	PFPB 2041, 2341, 2441
Skills																
Introduction to the Plumbing Profession				x												
Plumbing Safety-OSHA Training				x					x							
Introduction to Plumbing Math			x	x			x								x	
Introduction to Tools			x	x					x							
Intro to Blueprints & Plumbing Drawings	x	x	x	x			x				x		x			
Various Pipes & Fittings			x	x						x	x	x		x	x	x
Fixtures & Faucets				x								x		x		x
Intro to Drain, Waste & Vent (DWV) Systems			x	x	x						x	x		x		
Intro Water Distribution Systems											x	x		x		
Private Water Supply Systems												x				x
Private Waste Disposal Systems												x				x
Intermediate Math			x	x			x								x	
Reading Commerical Drawings	x	x					x				x		x	x		
Installing and Testing DWV Piping					x		x		x	x	x	x		x	x	
Installing Roof, Floor & Area Drains									x					x		x
Types of Valves				x				x		x	x			x		x
Installing and Testing Water Supply Piping							x	x	x	x		x		x		x
Installing Fixtures, Vales and Faucets							x	x	x	x				x		x
Installing Water Heaters									x			x				x
Fuel & Gas Piping/Fuel Gas Systems							x					x		x		x
Intro to Fuel Gas Code						x										
Applied Math			x	x			x								x	x
Types of Venting					x							x		x		
Indirect and Special Waste														x		
Sewage and Sump Pumps														x		
Intro to Water Pipe Sizing			x									x			x	
Backflow & Prevention								x								

Water Pressure Booster & Recirculation Systems					x										x	
Servicing Piping Systems, Fixtures & Appliances					x		x							x		x
Water Pump Theory and Service					x											
International Plumbing Code						x						x		x		
IPC	x	x				x				x	x	x		x	x	x
Client Customer Relations				x	x					x		x		x		
On-the-Job Learning			x	x	x	x	x	x	x	x	x	x	x	x	x	x
Care and Use of Tools, Equipment and Material for Plumbing and Heating			x	x			x	x	x		x			x	x	
Preparation of Tools, Equipment and Material for Plumbing and Heating			x	x			x	x			x	x	x			
Drainage Piping and Fittings			x	x	x	x				x	x	x		x		
Venting					x	x				x		x		x		
Single Fixture Installations, Setting Fixtures			x		x					x		x		x	x	x
Pipecutting, Reaming, Threading & Flanging			x				x	x	x	x		x		x	x	
Install & Maintain Steam and Hot Water Heating Systems														x		x
Hot and Cold Water Distribution Systems	x	x	x							x	x	x	x	x		x
High & Low Pressure Boilers			x				x	x						x	x	
Water Heater Installation												x		x		x
Water Pumps						x								x	x	
Code Review and Plumbing Math Review			x			x	x				x		x		x	
Sizing DWV and Storm Systems			x	x								x		x	x	
Locating Buried Sewer and Water Lines												x				
Water Supply Treatment														x		
Hot Tubs																x
Corrosive-Resistant Waste Piping															x	
Plumbing for Mobile Home Parks												x				x

Scaffolding Erector (Carpenter, Rough)

O*NET SOC Code: 47-2130.02	CBFM 1021	CNBT 1X01	CNBT 1X10	HYDR 1x01	OSHT 1015	OSHT 1017					
	Industrial Scaffolding & Rigging	*Intro to Cons Industry*	*Basic Construction Safety*	*Rigging & Conveying Systems*	*Safety and Accident Prevention*	*Basic Safety Communications*	*Hazwhopper*				
Skills											
Orientation											
OSHA Basic Orientation & Training		x	x		x	x					
Job Hazard Analysis (JHA) Training and Exercizes	x										
Scaffolding Classroom Training/certification/demonstration	x										
Respiratory Protection/ Fit Testing					x	x	x				
Asbestos/Lead/silica Training	x										
Employment Traits needed for success	Included under NCCER CORE										
NCCER Core Credential											
Safety		x		x		x					
Math		x		x		x					
Tools		x		x		x					
Construction Drawings		x		x		x					

Rigging		x		x		x					
Critical Skills		x		x		x					
Employability		x		x		x					
NCCER Scaffolding Specialist											
Intro to the Trade	x										
Trade Safety	x										
Trade Tools and Equipment	x										
Trade Math	x										
Support Scaffolds	x										
Mobile Scaffolds	x										
Suspension Scaffolds	x										
Untilizing Scaffolding as Shoring, Wood Framing and Formwork	x										
Asbestos Abatement and Other hazardous Material	x										
Scaffold Erection in and around sites containing Hazardous Materials	x										
** It is recommended that community colleges reference accompanying training information for evaluation of credit for prior learning. DOL Apprenticeships, Union Apprenticeships and Military MOS codes all offer information on level of experience and skill expertise that may be used in the determination of credit for prior learning.											

SHEET METAL

	Industrial Mathematics TECM 1001, 1301, 1401	Machine Shop Mathematics MCHN 1043, 1343	Technical Math TECM 1049, 1349	Technical Algebra TECM 1041, 1341	Technical Algebra & Trigonometry TECM 1343	Descriptive Geometry DFTG 2017, 2317, 2417	Geometric Dimensioning & Tolerancing DFTG 2040, 2350, 2450	Geometrical Optics LOTT 1343, 1443	Technical Trigonometry TECM 1017, 1317	Technical Calculations TECM 1303, 1403	Sheet Metal Fabrication I ABDR 1059, 1359, 1459	Introduction to Layout & Fabrication WLDG 1017, 1317, 1417	Intermediate Layout & Fabrication WLDG 1053, 1353, 1453	Advanced Technologies in Mechanical Design & Drafting WLDG 2035, 2335, 2435	HVAC Duct Fabrication HART 1000, 1300, 1400	Welding Safety, Tools & Equipment WLDG 1023, 1323, 1423	Construction Management III CNBT 2046, 2346, 2446	HVAC Shop Practices & Tools HART 1010, 1310, 14103	HVAC Zone Controls HART 2050, 2350, 2450	Testing, Adjusting, & Balancng HVAC Systems HART 2058, 2358, 2458	Basic HVAC for Plumbing/Pipefitting PFPB 1037, 1337	Basic Electicity for HVAC HART 1001, 1301, 1401	Codes, Specifications & Contract Documents ARCE 1342	Blueprint Reading & Sketching DFTG 1025, 1325, 1425	Introduction to Blueprint Reading for Welders WLDG 1013, 1313, 1413	Air Conditioning Installation & Startup HART 2038, 2338, 2438	Technical Drafting DFTG 1005, 1305, 1405	Technical Illustration & Presentation DFTG 2012, 2312, 2412	Basic Construction Safety CNBT 1010, 1110, 1210	Construction Site Safety & Health OSHT 1007, 1307	Leadership BMGT 2009, 2309	Construction Management I CNBT 2042, 2342, 2442	Construction Management II CNBT 2044, 2344	Introduction to Welding WLDG 1000, 1200	Fundamentals of Gas Metal Arc Welding (GMAW) WLDG 1002, 1202	Advanced Shielded Metal Arc Welding (SMAW) WLDG 2043, 2443, 2543	Advanced Gas Metal Arc Welding (GMAW) WLDG 2047, 2447, 2547	Advanced Gas Tungsten Arc Welding (GTAW) WLDG 2051, 2451, 2551	Fundamentals of Oxy-Fuel Welding & Cutting WLDG 1004, 1204	Fundamentals of Gas Tungsten Arc Welding (GTAW) WLDG 1006, 1206	Introduction to Welding Using Multiple Processes WLDG 1007, 1307, 1407	Welding Safety, Tools & Equipment WLDG 1023, 1323, 1423	Orbital Tube Welding WLDG 2050, 2350, 2450	Buidling Codes& Inspections CNBT 1042, 1342, 1442	Green Building CNBT 2017, 2317, 2417	OSHA Regulations-Construction Safety OSHT 1005, 1305, 1405	Industrial Air Conditioning HART 2043, 2343, 2443	Craning Principles CNSE 1011, 1311, 1411	Geometric Tolerancing DFTG 2039	Sheet Metal Fabrication II ABDR 2005	Occupational Math TECM 1013	Advanced Project Management BMGT 2030	Blueprint Reading for Specific Occupations DFTG 1023	Technical Writing II ETWR 1043	Workplace Safety OSHT 1003	Introduction to Project Management BMGT 1021	Shielded Metal Arc Welding WLDG 1003
Skills																																																									
Applied Math/Industrial Math	x		x										x	x	x		x	x		x	x	x		x	x	x	x	x				x		x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x			x	x
Machine Shop Math	x	x					x						x	x	x		x	x		x	x			x	x		x	x				x		x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x			x	x
Occupational Math	x		x				x						x	x	x		x	x		x	x			x	x		x	x				x		x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x			x	x
Technical Math			x										x	x	x		x	x		x	x			x	x	x	x	x				x				x	x	x	x	x	x	x	x	x	x		x		x	x		x	x			x	x
Technical Algebra			x										x	x	x		x	x		x	x	x		x	x	x	x	x				x		x	x	x	x	x	x	x	x	x	x	x	x		x		x	x		x	x			x	x
Technical Algebra & Trigonometry			x	x	x								x	x	x		x	x		x				x	x		x	x					x												x		x		x	x		x	x			x	
Descriptive Geometry						x	x						x	x	x		x	x		x	x			x	x		x	x					x	x											x		x		x	x		x	x			x	
Geometric Tolerancing													x	x	x		x	x		x				x	x		x	x					x	x										x	x		x		x	x		x	x			x	
Geometric Optics								x					x	x	x			x		x				x	x		x	x					x												x		x		x	x		x				x	
Technical Trigonometry									x				x	x	x		x	x		x				x	x		x	x					x												x		x			x		x	x			x	
Technical Calculations														x				x		x	x						x	x					x												x		x					x				x	
Sheet Metal Fabrication I	x	x	x	x	x	x	x				x	x		x	x	x		x	x	x	x		x	x			x	x						x	x	x	x	x	x	x	x	x	x	x	x		x	x		x		x	x			x	x
Sheet Metal Fabrication II	x	x	x	x	x	x	x				x	x		x	x	x		x	x	x	x		x	x			x	x						x	x	x	x	x	x	x	x	x	x	x	x		x			x		x	x			x	x
Introduction-Layout & Fabrication			x									x	x		x	x		x	x				x	x								x		x	x	x	x	x	x	x	x	x	x				x	x		x		x	x			x	x
Intermediate-Layout & Fabrication	x	x	x	x	x	x	x					x	x		x	x		x	x				x	x								x		x	x	x	x	x	x	x	x	x	x				x			x		x	x			x	x
Advanced Technologies in Mechanical Drafting & Design	x	x	x	x	x	x	x						x	x				x	x				x	x			x	x				x													x		x			x		x	x			x	
HVAC Duct Fabrication	x	x	x	x	x	x	x				x	x	x	x	x			x	x				x	x		x						x			x	x									x		x			x		x	x			x	
HVAC Troubleshooting & Repair											x								x	x		x		x		x							x												x		x					x		x		x	
Advanced HVAC														x	x				x	x		x	x	x									x												x		x					x		x		x	
HVAC Shop & Tools											x	x	x	x	x			x	x				x	x		x						x		x	x	x	x	x	x	x	x	x	x				x			x		x				x	x
HVAC Zone Controls														x	x				x	x		x	x	x		x																		x	x		x			x		x				x	
Testing, Adjusting & Balancing	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x		x	x		x	x	x		x			x	x	x	x												x	x		x					x		x		x	
Basic HVAC for Plumbing & Pipefitting												x								x	x		x	x		x			x	x	x	x												x	x		x					x	x			x	
Advanced HVAC Plumbing & Pipefitters																				x	x		x	x		x			x	x	x		x											x	x		x					x		x		x	
Basic Electrical for HVAC																				x		x	x	x		x			x	x	x	x		x	x	x	x	x						x	x		x					x	x		x	x	x
Codes, Specifications & Contract Docs															x		x			x	x	x	x	x		x		x	x	x		x		x										x	x		x					x	x		x	x	x
Blueprint Reading	x	x	x	x	x	x	x					x	x	x	x			x	x	x	x	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x	x	x	x	x	x		x			x		x	x	x	x	x	x
Blueprint Reading & Sketching	x	x	x	x	x	x	x					x	x	x	x			x	x	x	x	x	x	x	x	x	x	x					x	x	x	x	x	x	x	x	x	x	x	x	x		x			x		x	x	x		x	x
Intro Blueprint Reading for Welders											x					x		x			x			x	x				x	x		x		x	x	x	x	x	x	x	x	x	x				x			x		x				x	x
Air Conditioning Installation & Startup												x					x	x		x	x	x	x	x		x			x	x	x	x													x		x					x				x	
Technical Drafting	x	x	x	x	x	x	x						x	x			x	x					x	x	x		x	x			x		x		x									x	x		x					x		x		x	
Technical Illustration & Presentation																	x						x	x	x		x	x			x		x											x	x		x					x		x		x	
Technical Writing I																	x	x		x			x	x			x	x			x	x												x	x		x					x	x	x	x	x	
Technical Writing II																	x	x		x			x	x			x	x			x	x												x	x		x					x	x	x	x	x	
Basic Construction Safety																	x	x		x		x	x				x	x	x	x		x		x	x			x	x	x	x	x	x	x	x	x	x	x		x		x	x		x	x	x
Construction Site Safety & Health																	x	x		x		x	x			x	x	x	x	x		x		x	x		x	x	x	x	x	x	x	x	x	x	x	x		x		x	x		x	x	x
Workplace Safety & Health																	x	x		x		x	x			x	x	x	x	x		x		x	x		x	x	x	x	x	x	x	x	x	x	x	x		x		x	x		x	x	x
Leadership																	x			x						x	x	x			x	x	x											x	x	x	x					x	x	x	x	x	
Construction Management I															x		x			x			x		x		x	x			x	x												x	x	x	x					x	x			x	
Construction Management II												x			x		x			x			x		x		x	x			x		x											x	x		x					x				x	
Construction Management III															x		x			x			x		x		x	x			x													x	x		x					x				x	
Intro to Project Management												x			x					x			x		x		x	x			x													x	x		x					x				x	
Introduction to Welding												x			x	x					x	x			x	x			x	x		x		x	x	x	x	x	x	x	x	x	x	x			x			x		x				x	x
Fundamentals to Arc Welding																x		x			x	x			x				x	x				x	x	x	x	x	x	x	x	x	x	x						x		x				x	x
Shielded Metal Arc Welding																x		x			x	x			x				x	x				x	x	x	x	x			x	x	x	x						x		x				x	x
Advanced Shielded Metal Arc Welding																x		x			x	x			x				x	x				x	x	x	x	x			x	x	x							x		x				x	
Advanced Gas Metal Arc Welding																x		x				x			x				x	x							x	x			x	x	x							x		x				x	
Advanced Gas Tungsten Arc Welding																x		x				x			x				x	x								x			x	x	x							x		x				x	
Fundamentals of Oxy-Fuel Welding & Cutting																x		x							x	x			x	x				x	x	x	x	x	x	x	x	x	x							x		x				x	
Fundamentals of Tungsten Arc Welding																x		x				x			x				x	x								x		x	x	x	x							x		x				x	
Intro to Welding using Multiple Processes																x		x				x			x				x	x											x	x	x							x		x				x	
Welding Safety Tools & Equipment																x		x				x			x				x	x				x	x	x	x		x	x	x	x	x	x		x				x		x			x	x	
Orbital Tube Welding																		x			x	x			x				x	x												x	x							x		x				x	
Building Codes & Inspections												x			x		x	x			x	x				x			x	x	x													x						x		x				x	
Green Building											x						x			x		x					x					x	x											x	x							x				x	
OSHA Regulations Contruction Industry																x	x	x		x	x	x	x			x	x		x	x		x	x		x		x							x	x	x	x	x		x		x	x		x	x	
Industrial Air Conditioning											x	x	x		x		x	x		x	x	x	x				x	x	x	x		x												x	x		x	x		x		x				x	
Craning Principles																	x	x			x						x	x	x	x		x	x											x				x		x		x			x	x	

Water/Waste Water Process Technician

	Introduction to Process Technology	Safety Health and Environment	Safety and Ergonomics	Industrial Safety	Process Tech I - Equipment	Process Instrumentation1	In ternship	Process Instrumentation II	Process Technology II - Systems	Principles of Quality	Process Tech III - Operations	Process Troubling	5/28/2025
	PTAC 1002, 1302, 1402	PTAC 1008, 1308, 1408	ENTC 1347	OSHT 1320	PTAC 1010, 1310, 1410	PTAC 1032, 1332, 1432	PTAC 2387	PTAC 2036, 2336, 2436	PTAC 2020, 2420	PTAC 2014, 2314	PTAC 2038, 2438	PTAC 2046, 2346, 2446	
Tools, Equipment and Workplace Safety													
Become familiar with tools, pipe and other materials used on the job		x	x	x	x								
Understand and use personal protective equipment and safety procedures	x	x			x	x	x	x	x	x	x	x	
Demonstrate general plant safety and security operations	x	x									x		OJT
Plan and set up work areas for safety of crew and public							x						OJT
Confined spaces and traffic control zones		x		x									OJT
Perform all work in conformance with OSHA regulations	x												
Vehicles and Heavy Equipment													
Ensure that vehicles and equipment are adequately stocked and serviced													OJT
Become familiar working with excavation and other heavy equipment	x												OJT
	PTAC 1002, 1302, 1402	PTAC 1008, 1308, 1408	ENTC 1347		PTAC 1010, 1310, 1410	PTAC 1032, 1332, 1432	PTAC 2387	PTAC 2036, 2336, 2436	PTAC 2020, 2420	PTAC 2014, 2314	PTAC 2038, 2438	PTAC 2046, 2346, 2446	
System Operations & Maintenance													

Develop a working knowledge of the operation, methods, and procedures of a water treatment and distribution system	x								x		x		
Perform installation and inspection of new water lines and services													OJT
Understand and implement customer metering and biling procedures													OJT
Perform leak detection and understand water loss control											x	x	
Reading water meters, perform testing, and proper sizing						x		x				x	OJT
Demonstrate ability to read and interpret maps and drawings of the water system, to locate valves and water mains	x				x	x			x		x		
Assist with the installation, maintenance, and repair of the treatment plant, storage tanks, and the distribution system		x											
Develop a working knowledge of preventive maintenance, troubleshooting, and repair of mechanical equipment		x											
Quality Control													
Learn to perform all aspects of sampling, montioring, and testing required to maintain compliance with Federal State and Local regulations												x	
	PTAC 1002, 1302, 1402	PTAC 1008, 1308, 1408	ENTC 1347		PTAC 1010, 1310, 1410	PTAC 1032, 1332, 1432	PTAC 2387	PTAC 2036, 2336, 2436	PTAC 2020, 2420	PTAC 2014, 2314	PTAC 2038, 2438	PTAC 2046, 2346, 2446	
Identify normal/out-of-range values						x		x		x		x	

Maintain open communication and report results to supervisors											x	x	OJT
Learn emergency response procedures		x									x		
Logistics, Reports and Supervison													
Complete work order forms and document routine maintenance											x		
Order equipment and supplies as needed													OJT
Visit other facilities to learn about new technology							x						???

WELDING

	Introduction to Welding	Fundamentals of Gas Metal Arc Welding (GMAW)	Shielded Metal Arc Welding (SMAW)	Fundamentals of Oxy-Fuel Welding & Cutting	Fundamentals of Tungsten Metal Arc Welding	Introduction to Welding Using Multiple Processes	Introduction to Flux Cored Arc Welding (FCAW)	Introduction to Blueprint Reading for Welders	Introduction to Layout & Fabrication	Welding Fundamentals	Welding Safety, Tools & Equipment	Introduction to Oxy-Fuel Welding & Cutting	Welding Codes & Standards	Introduction to Shielded Metal Arc Welding (SMAW)	Introduction to Gas Metal Arc Welding	Introduction to Gas Tungsten Arc Welding (GTAW)	Introduction to Pipe Welding	Introduction to Welding Metallurgy	Intermediate Layout & Fabrication	Intermediate Shielded Metal Arc Welding (SMAW)	Intermediate Pipe Welding	Intermediate Welding Using Multiple Processes	Advanced Blueprint Interpretation & Cost Analysis	Welding Automation	Advanced Layout & Fabrication	Advanced Oxy-Fuel Welding & Cutting	Advanced Shielded Metal Arc Welding (SMAW)	Advanced Gas Metal Arc Welding (GMAW)	Advanced Gas Tungsten Arc Welding (GTAW)	Advanced Flux Cored Arc Welding	Advanced Pipe Welding
	WLD 0 1000, 1000	WLD 0 1002 1002	WLD 0 1003	WLD 0 1004 1004	WLD 0 1006 1006	WLD 0 1007 1307 1407	WLD 1012 1312 1412	WLD 1013 1313 1413	WLD 1017 1317 1417	WLD 1021 1421 1521	WLD 1023 1323 1423	WLD 1025 1425 1525	WLD 1027 1327 1427	WLD 1028 1428 1528	WLD 1030 1430 1530	WLD 1034 1434 1534	WLD 1035 1435 1535	WLD 1037 1337 1437	WLD 1053 1353 1453	WLD 1057 1457 1557	WLD 2006 2506 2606	WLD 2013 2413 2513	WLD 2031 2431	WLD 2032 2332 2432	WLD 2035 2435 2535	WLD 2038 2438 2538	WLD 2043 2443 2543	WLD 2047 2447 2597	WLD 2051 2451 2551	WLD 2052 2452 2452	WLD 2053 2453 2553
Skills																														
Introduction to Construction Math	x	x	x	x	x	x	x		x	x	x	x		x	x	x	x			x	x	x				x	x	x	x	x	x
Introduction to Hand Tools	x	x	x		x				x	x			x						x	x			x		x	x					
Introduction to Power Tools	x			x		x	x		x	x	x	x		x			x									x					
Introduction to Blueprints	x	x	x	x	x	x	x		x	x	x	x		x			x										x					
Basic Rigging	x	x	x		x			x	x	x			x						x			x	x		x	x	x	x	x	x	x
Welding Safety										x	x										x	x				x	x	x	x	x	x
Oxyfuel Cutting	x	x	x	x	x	x	x		x	x	x	x		x	x	x	x			x	x	x		x	x	x	x	x	x	x	x
Base Metal Preparation	x	x	x	x	x	x	x		x	x		x					x			x	x	x				x					x
Weld Quality	x	x	x	x	x	x	x		x	x		x	x	x	x	x	x	x		x	x	x		x	x	x	x	x	x	x	x
SMAW-Equipment & Setup	x	x	x	x	x	x	x		x		x	x	x	x	x	x	x			x	x	x		x		x	x	x	x	x	x
SMAW-Electrodes & Selection	x		x			x				x				x			x	x		x	x	x			x		x				x
SMAW-Beads & Fillet Welds	x		x			x				x				x			x			x	x	x			x		x				x
SMAW-Groove Welds with Backing	x		x			x				x				x						x	x	x					x				x
Joint Fit-Up & Alignment			x			x				x				x						x	x	x					x				x
Welds	x	x	x	x	x	x	x		x			x		x			x			x	x	x				x	x				x
SMAW-Open-Root Pipe Welds			x			x								x						x	x	x					x				x
Welding Symbols																	x				x										x
Reading Welding Detail Drawings	x	x	x		x		x	x	x	x			x		x				x	x	x	x	x		x	x	x	x			x
Stainless Steel Groove Welds	x	x	x		x		x	x	x				x		x				x	x	x	x	x		x	x	x	x			x
Air Carbon Arc Cutting & Gouging					x											x						x								x	
Plasma Arc Cutting				x	x	x			x			x				x						x				x				x	
GMAW & FCAW-Equipment & Filler Metals						x			x													x		x				x	x	x	
GMAW & FCAW-Plate		x				x	x		x						x			x				x			x			x		x	
GTAW-Equipment & Filler Metals		x				x	x		x						x							x						x		x	
GTAW-Aluminum Plate					x	x										x		x				x			x				x		