

APPRENTICESHIP STANDARDS

For

**Building Trades Plumbers, Pipefitters and Heating, Air Conditioning & Refrigeration Service
Technician**

Local 350

1150 Greg Street

Sparks NV 89431

775-359-2229

JOINT APPRENTICESHIP TRAINING COMMITTEE

OF

Sparks, Nevada

FOR THE OCCUPATIONS OF

PLUMBER,

PIPEFITTER/STEAMFITTER

Rapids Code 0432

**HEATING, VENTILATION, AIR CONDITIONING
AND REFRIGERATION TECHNICIAN**

Rapids Code: 0637

CERTIFICATION DATE: _____

CERTIFICATION NUMBER: _____

STANDARDS OF APPRENTICESHIP
DEVELOPED BY
UA LOCAL 350 JATC
FOR THE OCCUPATIONS OF
PLUMBER, PIPEFITTER/STEAMFITTER
HEATING, VENTILATION, AIR CONDITIONING,
AND REFRIGERATION TECHNICIAN

Approved by
Nevada State Apprenticeship Council

FOREWORD

The Local 350 Joint Apprenticeship and Training Committee recognizes the need for structured training to maintain the high level of skill and competence demanded in the pipe trades.

Registered Apprenticeship provides the most practical and sound method to meet that need, to prepare individuals to be skilled craft workers, and to ensure industry an adequate supply of skilled workers.

In furtherance of those goals, the Local 350 Joint Apprenticeship and Training Committee has established these Standards of Apprenticeship outlining all the terms and conditions for the qualification, recruitments, selection, employment and training of apprentices.

DEFINITIONS

APPRENTICE: Any individual employed by the employer meeting the qualifications described in the Standards of Apprenticeship who has signed an Apprenticeship Agreement with the local Sponsor providing for training and related instruction under these Standards, and who is registered with the Registration Agency.

APPRENTICE ELECTRONIC REGISTRATION (AER): The Federal electronic tool that allows for instantaneous transmission of apprentice data for more efficient registration of apprentices and provides Program Sponsors with a faster turnaround on their submissions and access to their apprenticeship program data.

APPRENTICESHIP AGREEMENT: The written agreement between the apprentice and the Sponsor setting forth the responsibilities and obligations of all parties to the Apprenticeship Agreement with respect to the Apprentice's employment and training under these Standards. Each Apprenticeship Agreement must be registered with the Registration Agency.

CAREER LATTICE: Career lattice apprenticeship programs include occupational pathways that move an apprentice laterally or upward within an industry. These programs may or may not include an interim credential leading to the Certificate of Completion of Apprenticeship credential.

CERTIFICATE OF COMPLETION OF APPRENTICESHIP: The Certificate of Completion of Apprenticeship issued by the Registration Agency to those registered apprentices certified and documented as successfully completing the apprentice training requirements outlined in these Standards of Apprenticeship. *(If applicable)*

CERTIFICATE OF TRAINING: A Certificate of Training may be issued by the U.S. Department of Labor's, Office of Apprenticeship Administrator to those registered apprentices that the JATC has certified in writing to the Registration Agency that the apprentice has successfully met the requirements to receive an interim credential. *(If applicable)*

COLLECTIVE BARGAINING AGREEMENT: The negotiated agreement between the Union and signatory employers that sets for the terms and conditions of employment.

COORDINATOR/DIRECTOR: Means the person designated by the local JATC to perform the duties stated in the standards of apprenticeship.

ELECTRONIC MEDIA: Media that utilize electronics or electromechanical energy for the end user (audience) to access the content; and includes, but is not limited to, electronic storage media, transmission media, the internet, extranet, lease lines, dial-up lines, private networks, and the physical movement of removable/transportable electronic media and/or interactive distance learning.

EMPLOYER: Means any person or organization employing an apprentice whether or not such person or organization is a party to an Apprenticeship Agreement with the apprentice.

HYBRID OCCUPATION: The hybrid approach measures the individual apprentice's skill

acquisition through a combination of specified minimum number of hours of on-the-job learning and the successful demonstration of competency as described in a work process schedule. *(If applicable)*

INTERIM CREDENTIAL: Interim Credential means a credential issued by the Registration Agency, upon request of the appropriate sponsor, as certification of competency attainment by an apprentice. *(If applicable)*

JOB CORPS CENTERS: Any of the Federally-funded Job Corps Centers throughout the U.S. and Puerto Rico. Job Corps annually serves approximately 65,000 youth and young adults between 16-24 years of age.

JOINT APPRENTICESHIP TRAINING COMMITTEE (COMMITTEE): Apprenticeship Committee (Committee) means those persons designated by the sponsor to act as an agent for the sponsor in the administration of the program. A joint committee is composed of an equal number of representatives of the employer(s) and of the employees represented by a bona fide collective bargaining agent(s).

JOURNEYWORKER: A worker who has attained a level of skill, abilities and competencies recognized within an industry as having mastered the skills and competencies required for the occupation. (Use of the term may also refer to a mentor, technician, specialist or other skilled worker who has documented sufficient skills and knowledge of an occupation, either through formal apprenticeship or through practical on-the-job experience and formal training.)

O*NET-SOC CODE: The Occupational Information Network (O*NET) codes and titles are based on the new Standard Occupational Classification (SOC) system mandated by the federal Office of Management and Budget for use in collecting statistical information on occupations. The O*NET classification uses an 8-digit O*NET-SOC code. Use of the SOC classification as a basis for the O*NET codes ensures that the O*NET information can be readily linked to labor market information such as occupational employment and wage data at the national, State and local levels.

ON-THE-JOB-LEARNING (OJL): Tasks learned on-the-job in which the apprentice must become proficient before a completion certificate is awarded. The learning must be through structured, supervised work experience. The task define for the apprentice in each occupation will be based upon the **DACUM*** which represents the work processes described in these Apprenticeship Standards in line with the apprenticeship course outlines for United Association Apprenticeship Trades.

***DACUM** is an occupational analysis method that is used when developing a training curriculum. It is widely recognized in academics as being a useful way in performing an analysis as it is compiled by expert workers in each craft identifying the duties, skills, tasks, knowledge and traits associated with each individual work process. Every specific craft within the United Association has a specific work process that it is associated with.

PROGRAM SPONSOR: The Sponsor in whose name the Standards of Apprenticeship will be registered, and which will have the full responsibility for administration and operation of the apprenticeship program.

REGISTERED APPRENTICESHIP PARTNERS INFORMATION DATA SYSTEM (RAPIDS): The Federal system, which provides for the automated collection, retention, updating, retrieval and summarization of information related to apprentices and apprenticeship programs.

REGISTRATION AGENCY: Means the U.S. Department of Labor , Office of Apprenticeship or a recognized State Apprenticeship Agency that has responsibility for registering apprenticeship programs and apprentices; providing technical assistance; conducting reviews for compliance with Title 29, CFR parts 29 and 30 and quality assurance assessments. (**Nevada State Apprenticeship Council, Governors Office of Workforce Innovation, OWINN**)

RELATED INSTRUCTION (RI): An organized and systematic form of instruction designed to provide the apprentice with the knowledge of the theoretical and technical subjects related to the apprentice's occupation. Such instruction may be given in a classroom, through occupational or industrial courses, or by correspondence courses of equivalent value, electronic media, or other forms of self-study approved by the Registration Agency.

STANDARDS OF APPRENTICESHP: This entire document including all appendices and attachments hereto, and any future modifications or additions approved by the Registration Agency.

SUPERVISOR OF APPRENTICE(S): The person or persons designated by the contractor/employer who is responsible for ensuring the integrity of training and record keeping requirements on the job.

TIME-BASED OCCUPATION: The time-based approach measures skill acquisition through the individual apprentice's completion of at least 2,000 hours of on-the-job learning as described in a work process schedule. (*If applicable*)

TRANSFER: A shift of apprenticeship agreement from one program to another or from one employer within a program to another employer within that same program, where there is agreement between the apprentice and the affected apprenticeship committee or program sponsor.

UNION: Means the United Association and any of its affiliated Local Unions party to an appropriate labor agreement between the parties.

YOUTHBUILD U.S.A.: YouthBuild is a youth and community development program that simultaneously addresses core issues facing low-income communities: housing, education, employment, crime prevention, and leadership development. (*If applicable*)

SECTION I - PROGRAM ADMINISTRATION:

Program Sponsors establish a Joint Apprenticeship Training Committee (JATC) to carry out the responsibilities and duties required of a Program Sponsor as described in these Standards of Apprenticeship. A list of the membership and the areas of expertise they represent must be provided to the Registration Agency.

Structure of the Joint Apprenticeship and Training Committee (JATC)

The JATC of Local Union **350** of the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada and NAM (Nevada Association of Mechanical Contractors) is established. The JATC is composed of an equal number of representatives appointed by the contractors' association and by the local union.

- A. The groups they represent will select members of the JATC
- B. Membership will be composed of an equal number of representatives of the employers (4) and of the employees represented by a bona fide collective bargaining agent (4). The members from the CBA must have attained journeyworker's status in one of the trades covered under this program. Each side may also appoint one alternate who may have voting status in case of absence of a member from which the alternate is a party to.
- C. Technical Assistance - such as that from the U.S. Department of Labor, Office of Apprenticeship, the Registration Agency which is the Nevada State Apprenticeship Council, Governors Office of Workforce Innovation (OWINN), and vocational schools - may be requested by the JATC.

Administrative Procedures

- A. The JATC will elect a Chairperson and a Secretary. They will also determine the time and place of regular meetings which will take place monthly.
- B. The Chairperson and Secretary will have the power to vote on all questions affecting the apprenticeship.
- C. The Chairperson and Secretary should rotate among members of the JATC.

Responsibilities of the Joint Apprenticeship and Training Committee

- A. Members of the Committee will be educated as to the equal employment opportunity in apprenticeship.
- B. Members of the Committee will be educated as to the fiduciary responsibility of the JATC.
- C. Cooperate in the selection of apprentices as outlined in this program.
- D. Ensure that apprentices are under written Apprenticeship Agreements and register the local apprenticeship standards and agreements with the Nevada State Apprenticeship Council (OWINN)
- E. Review and recommend apprenticeship activities in accordance with this program.
- F. Establish the minimum standards of education and experience required of apprentices.
- G. Meet at least **monthly** to review records and progress of each apprentice in training and recommend improvement or modification in training schedules, schooling and other training activities. Written minutes of the meeting will be kept.
- H. Determine the quality and quantity of experience on the job, which apprentices should have,

- and to make every effort toward their obtaining it.
- I. Hear and resolve all complaints of violation of Apprenticeship Agreements.
 - J. Arrange tests or evaluations for determining the apprentice's progress in manipulative skills and technical knowledge.
 - K. Maintain a record of all apprentices, showing their education, experience, and progress in learning the occupation.
 - L. Monitor the physical fitness of qualified applicants to perform the work of the occupation that may require a medical examination prior to their employment as apprentices.
 - M. Advise apprentices on the need for accident prevention and provide instruction with respect to safety in the workplace.
 - N. Certify that apprentices have successfully completed their apprenticeship program.
 - O. Notify the Nevada State Apprenticeship Council (OWINN) of all new apprentices to be registered, credit granted, suspensions for any reason, reinstatements, extensions, completions, and cancellations with explanation of causes and notice of completions of Apprenticeship Agreements.
 - P. Supervise all the provisions of the local standards and be responsible, in general, for the successful operation of the standards by performing the duties here listed by cooperating with public and private agencies which can be of assistance by obtaining publicity to develop public support of apprenticeship and by keeping in constant touch with all parties concerned; apprentices, employers and journeyworkers.
 - Q. Provide apprentices with a copy of the written rules and policies and the apprentice will sign an acknowledgment receipt of same. This procedure will be followed whenever revisions or modifications are made to the rules and policies.

SECTION II - EQUAL OPPORTUNITY PLEDGE

UA Local 350 Pipe Trades Apprenticeship programs will not discriminate against apprenticeship applicants or apprentices based on race, color, religion, national origin, sex (including pregnancy and gender identity), sexual orientation, genetic information, or because they are an individual with a disability or a person 40 years old or older. UA Local 350 Pipe Trades Apprenticeship programs will take affirmative action to provide equal opportunity in apprenticeship and will operate the apprenticeship program as required under Title 29 of the Code of Federal Regulations, part 30.

SECTION VI Affirmative Action Plan

- A. See Appendix A

SECTION VII Selection Procedures

- A. Selection of apprentices under the program shall be made from qualified applicants on the basis of qualifications alone and without regard of race, creed, color, religion, national origin, sex, age, sexual orientation, disability or occupationally irrelevant physical requirements in accordance with objective standards which permit review, after full and fair opportunity for applications; and this program shall be operated on a completely nondiscriminatory basis.
- B. Applicants must be at least 17 years of age (*With parental consent*) and submit the following information along with their application:

- A copy of their birth certificate
 - A copy of their current legal drivers license
 - A copy of their social security card
 - Proof of high school graduation or high school equivalency (G.E.D. or H.S.E.) by certificate and official report of test results.
 - A transcript of high school credits, as well as any higher-level schooling if any.
 - Military transfer or discharge DD 214, if applicable.
- C. Applicants who have submitted all required paperwork must complete a math test prior to being scheduled for an interview.
- D. Applicants must pass a post selection pre-indenture drug test.
- E. Applications will be accepted from interested candidates year round. When accepting such applications the local Nevada Job Connect, Nevada State Apprenticeship Council, United States Department of Labor, Office of Apprenticeship and the local High School officials will be notified semi-annually so that eligible candidates known to these agencies maybe informed. All applicants will complete an "Application for Apprenticeship" form attached as part of these Standards, which the Joint Apprenticeship Training Committee will interview and rate all applicants on the basis of comparative qualifications. The rating sheet attached will be used by the employers' agent and the applicant rated highest on the basis of qualifications alone shall be the applicant accepted. If more than one applicant is accepted the next highest rated applicant shall be the candidate accepted until the need for trainees is filled.

Direct Entry:

The JATC may choose to invoke the direct entry provision without regard to the existing selection procedure used for entry into the apprenticeship program. Individuals selected into the apprenticeship program via direct entry shall only include those individuals described below who have received training or employment in an occupation directly or indirectly related to the occupation(s) registered in these Standards. The JATC will award credit for previous experience in accordance with Section XI of these Standards, and will pay the apprentice(s) at the wage rate commensurate with their skill attainment. The credit for previous experience shall be awarded without regard to race, color, religion, national origin or sex. The direct entry provision may only be used if at the time of entry, the committee has determined that room in the program exists for placement of the new apprentice(s). The methods for direct entry shall include the following:

- F. Direct entry into the program will be allowed by those individuals who come through the use of the helmets to hard-hats program. *(Note: This is a method of direct entry into the apprenticeship program whereby the requirement of previous training or employment is waived.)*
- G. Direct entry into the program will be allowed by those individuals who are graduates of approved Technical Institute welding programs.
- H. An employee of a non-signatory employer not qualifying as a Journeyworker when the employer becomes signatory, shall be evaluated by the JATC, and indentured at the appropriate period of apprenticeship based on previous work experience and related training.

- I. An individual who signs an authorization card during an organizing effort - wherein fifty-one percent (51%) or more of the employees have signed authorization cards, whether or not the employer becomes signatory, and is an employee of the non-signatory employer and does not qualify as a journeyworker shall be evaluated, and may be indentured by the JATC at the appropriate period of apprenticeship based on previous work experience and related training. (Note: This is a method of direct entry into the apprenticeship program). For such applicants to be considered they must:
- a. be employed in the JATC jurisdiction when the authorization card was signed.
 - b. have been employed by the employer before the organizational effort commenced
 - c. all employees of the employer must have been offered the opportunity to sign authorization cards and be evaluated.
 - d. provide reliable documentation to the JATC to show they were an employee performing work of the craft, prior to signing the authorization card.
- J. An individual who is or who has worked for a signatory or non-signatory employer and who, of his/her own choosing, solicits membership as a journeyman and does not qualify as a journeyman, will be evaluated in accordance with the procedures for granting of credit for previous experience and indentured by the JATC at the appropriate period of apprenticeship based on previous work experience and related training. Any employee not eligible for receipt of credit must make application in accordance with the normal application procedures. Entry into the program through this method shall be done without regard to race, color, religion, national origin, or sex. *(Note: This is a method of direct entry into the apprenticeship program.)*
- K. When selecting an applicant to become indentured as an apprentice, the decision of the Joint Committee shall be final and binding on both the Union and the Employer.
- L. Application forms and Rating Sheets will be filed and held for inspection for a period of not less than five (5) years from date of final disposition of the application.
- M. In the operating of this Apprenticeship Program there shall be no discrimination in Apprenticeship or employment during apprenticeship, including but not limited to job assignment, promotion, demotion, lay-off, rates of pay, or other forms of compensation. All apprentices employed shall be subjected to the same job performance requirements.
- N. Complaints may be filed in writing with the Nevada State Apprenticeship Council (OWINN), 555 E. Washington Ave., Suite 4900, Las Vegas Nevada 89101. This must be done within 30 days of the alleged complaint.

SECTION VIII
Qualification for Apprenticeship

- A. Applicants to be accepted for apprenticeship must meet the following requirements:
1. Submit all required paperwork.
 2. Must be at least 17 years of age. (*with parental consent*)
 3. Physically capable of performing the essential functions of the apprenticeship program, with or without a reasonable accommodation, and without posing a direct threat to the health and safety of the individual or others.
 4. Previous experience is not required.
 5. Must have a valid driver's license.
 6. Must have a social security card.
 7. High school diploma or GED/HSE high school equivalency certificate.

SECTION IX
Probationary Period

- A. Each applicant selected for the Building Trades and Service, Maintenance, Air Conditioning and Refrigeration apprenticeships shall serve a probationary period of one (1) year or 25% of their apprenticeship from the date they are indentured and for a minimum of 1700 hours on the job for the Building Trades apprentice and 1600 hours on the job for the Service, Maintenance, and Refrigeration and Air Conditioning apprentice. At no time shall the probationary period exceed 25% of the term of apprenticeship.
- B. The probationary apprentice who does not conform to the rules and regulations shall have his or her apprenticeship agreement canceled. During this period the Apprentice Agreement may be terminated by the Joint Committee upon the written request from the employer, or the Apprentice without the formality of a hearing.
- C. Any probationary apprentice considered to be unsatisfactory after a review of the probationary records shall have his or her apprenticeship agreement canceled.
- D. The records for each probationary apprentice shall be reviewed at the end of the probationary period. Records shall consist of: a complete record of attendance, grades, on-the-job progress reports and any disciplinary action connected with instruction during the probationary period.
- E. After the probationary period an Apprentice Agreement shall not be terminated without a hearing of the case by the Joint Committee. The employer, the Union and the Apprentice have the right to appear at the hearing of the Joint Committee. The Nevada Apprenticeship Council shall be advised of all terminations.
- F. Any aggrieved party of the Joint Committee has the right to appeal to the Nevada State Apprenticeship Council, Governors Office of Workforce Innovation (OWINN) 555 East Washington Ave. Suite 4900, Las Vegas, Nevada 89101. Such appeal must be made within 30 days of the alleged grievance.

SECTION X
The Term of Apprenticeship

Building Trades Plumber Apprentice

- A. The term of apprenticeship including the probationary period shall consist of a minimum of five (5) years training. This training shall be divided into ten (10) periods. Each period will consist of 850 hours of reasonably continuous on-the-job training and a minimum of 240 hours of related instruction per year (120 hrs. per period) for a total of 8500 work hours and 1230 classroom hours.
- B. During the 9th and 10th period of training the apprentice may be allowed to perform the work of the trade within close proximity of a journeyman consistent with the local collective bargaining agreement. The fifth year apprentice will remain under the jurisdiction of the Joint Committee.

Service, Maintenance, Air Conditioning and Refrigeration Apprentice

- A. The term of apprenticeship including the probationary period shall consist of a minimum of four (4) years training. This training shall be divided into eight (8) periods. Each period will consist of 800 hours of reasonably continuous on-the-job training and a minimum of 200 hours of related instruction per year (100 hrs. per period) for a total of 6400 work hours and 800 classroom hours.
- B. When consistent with the local collective bargaining agreement and without the direct supervision of journeymen:
 - during the 7th and 8th period of training the apprentice may be allowed to perform the work of the trade within close proximity of a journeyworker.

The fourth year apprentice will remain under the jurisdiction of the Joint Committee.

SECTION XI
Credit for Previous Experience

Apprentices accepted in the program with previous experience in the Building Trades, and Service, Maintenance, Air Conditioning and Refrigeration field may ask for advanced standing or credit. This must be done before expiration of their probationary period. At this time such experience shall be evaluated by the Joint Committee and if such experience warrants it, the Committee will place the apprentice in the appropriate period, with wages for any progression step so granted. Such advance credit shall be subject to review prior to their next advancement.

Exemption will be given to activated Reservists and National Guard Members. Returning reservists have 60 days to submit documentation of job related training or classroom training they received while on active duty.

SECTION XII

Apprentice Agreement

- A. Each apprentice shall sign an Apprenticeship Agreement, subject to the approval of the Joint Committee, which shall be registered within 10 days and approved by the Nevada Apprenticeship Council. Copies of the Apprentice Agreement will be sent to and retained by the apprentice, the Employer, the Union and the Joint Committee and the Nevada State Apprenticeship Council.
- B. Each Apprentice Agreement shall contain a statement covering the terms and conditions of employment and training; a statement of the trade to be learned; a schedule of the work processes and wage rates; a statement that the apprentice shall attend related theoretical instruction classes as stated in Section IX.
- C. An Apprenticeship Agreement signed by the apprenticeship committee will bind the committee to use every effort to provide reasonably continuous employment for the apprentice as stipulated in Section XVI as long as there is one Journeyman employed in the shop to employ the apprentice.
- D. ~~A City of Reno plumbing apprentice license will be required during the Building Trades apprenticeship.~~ It will be mandatory for Building Trades apprentices to take and pass the Nevada Board of Plumbing Examiners (N.B.O.P.E.) Journeyman's plumbing test before graduating.
- E. Each Building Trades Plumber apprentice shall complete and pass the required medical gas installer, pipe fitter and plumbing certification courses and tests before graduating.
- F. Each Service, Maintenance, Air Conditioning and Refrigeration Apprentice shall successfully pass a modified S.T.A.R. certification test or equivalent before graduation.

SECTION XIII

On-the-job training for Apprentices

- A. The J.A.T.C. will be responsible for the training and general supervision of all apprentices. To enable the Building Trades Plumber apprentice to qualify at the end of training as a skilled journeyman, the apprentice shall, during their training, be given the opportunity to install and assist in installing piping material, as their skill permits under the direct supervision of a journeyman.
- B. For the protection of the individual consumer and the general public, all work done by apprentices as indicated shall conform in every respect with the requirements prescribed in all applicable local codes and ordinances.
- C. The Joint Committee may rotate or shift the apprentices from one employer to another as necessary to assure complete training in all branches of the piping trades.
- D. It shall be the goal of the J.A.T.C. to see that every apprentice shall receive instruction and experience in all branches of their respective trades, which is necessary to develop a practical, all-around skilled artisan versed in the theory and practice of the trade, in accordance with the following schedules:

BUILDING TRADES PLUMBER APPRENTICE
(approx. hrs.)

A.	Use & care of hand tools, equipment and hazardous materials.	288
B.	Installations of soil, waste, vent, storm drain, gray water, rain water collection and water re-use systems.	200-2000
C.	Installation of hot and cold water for domestic purpose. Installation of domestic cold, hot, hot return piping. Cast iron, steel, copper and plastic.	200-500
D.	Soldering and brazing of all copper pipe related to the trade.	800-1000
E.	Installation of all plumbing fixtures, tubs shower receptacles including those listed in 2010 UPC green supplement.	200-1600
F.	Welding connected with trade.	40-400
G.	Maintenance, service and repair of all plumbing fixtures or systems and components thereof.	350-400
H.	Installation of fuel gas piping and distribution system.	600-800
I.	Installation, operation, service and maintenance of high efficiency fuel gas appliances and equipment.	350-400
J.	Rigging and material handling of equipment and piping for all types of systems.	400-600
K.	Principal tools of the trade: Power and Hand.	575
L.	Erection and dismantling of scaffolding and safe use of ladders.	60
M.	Installation and maintenance of industrial process piping for mining, cooling, heating, incl geothermal, solar hydronics and other green mechanical systems.	200-3000
N.	Installation of recessed floor and wall radiant heating and ventilation units and supply piping from all sources including boilers, solar hydronic and geothermal.	200-800
O.	Installation and maintenance of HVAC controls equipment, pumps and thermostats from all sources.	400-800
P.	Testing under pressure of all types of plumbing and mechanical systems incl re-attachment and commissioning of systems.	200-400
Q.	Design and layout of piping utility systems	200-600
TOTAL HOURS		8500

SERVICE, MAINTENANCE, AIR CONDITIONING AND REFRIGERATION APPRENTICE

(approx hrs.)

A.	Electrical and Pneumatic Controls	1500-2500
B.	Safety.	150-250
C.	Heating, Gas and Oil	750-1050
D.	Cooling A/C	750-1050
E.	Refrigeration	500-800
F.	Metering Devices	370
G.	Codes	185
H.	Brazing & Soldering	170
I.	Refrigeration Piping	400-800
J.	Venting.	185
K.	Air Balance	100-250

TOTAL HOURS	6400
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The above schedules are recognized as sufficiently flexible to be changed if accumulated experience indicates that changes will be to the advantage of the employer and the apprentice. Full experience in all the principal trade processes shall be provided the apprentice in every case.

SECTION XIV

Wages

Rates of pay for Building Trades Plumber and Service, Maintenance, Air Conditioning and Refrigeration apprentices shall be as follows: provided, however, that no apprentice shall receive an increase in pay at the end of period unless his progress on-the-job and related instruction work is satisfactory.

WAGE SCALES

Building Trades Plumber Apprentice

1st period	45% of journeyman's wage
2nd period	45% of journeyman's wage
3rd period	50% of journeyman's wage
4th period	55% of journeyman's wage
5th period	60% of journeyman's wage
6th period	65% of journeyman's wage
7th period	70% of journeyman's wage
8th period	75% of journeyman's wage
9th period	80% of journeyman's wage
10th period	80% of journeyman's wage

Plumber Apprentice Fringe Benefits

1st through 10th period \$13.21

Service, Maintenance, Air Conditioning and Refrigeration Apprentice

1st period	55% of journeyman's wage
2nd period	60% of journeyman's wage
3rd period	65% of journeyman's wage
4th period	70% of journeyman's wage
5th period	75% of journeyman's wage
6th period	80% of journeyman's wage
7th period	85% of journeyman's wage
8th period	90% of journeyman's wage

Service, Maintenance, Refrigeration and Air Conditioning Apprentice Apprentice Fringe Benefits

1st through 4th period \$11.10
5th through 8th period \$11.58

The above wage schedules are based upon the journeyman's wage and are subject to change through Collective Bargaining Agreement and upon approval from the Nevada State Apprenticeship Council. Employers shall not pay the apprentice a lower rate of pay than what is stipulated in his or her Apprentice Agreement. Apprentices will be paid a progressively increasing schedule of wages during their apprenticeship based on the acquisition of increased skill and competence on the job and in related instruction.

Before an apprentice is advanced to the next period of training or journeyman status, the J.A.T.C. shall evaluate all progress to determine whether advancement has been earned by satisfactory on-the-job training and related training classes. In determining whether satisfactory progress has been made, the J.A.T.C. shall be guided by the records of work experience and related instruction.

SECTION XV

Hours

- A. Apprentices shall work the same hours as journeymen and shall be subject to the same conditions. At no time shall apprentices be permitted to work overtime without being accompanied by a journeyman.
- B. Apprentices who do not complete the required hours of on-the-job training during a given segment shall have the term of segment extended until the required number of hours are accrued.

Ratio

Plumber/Pipefitter apprentices may be dispatched to any contractor who is signatory to the Agreement. The employer may employ one Plumber/Pipefitter apprentice after the first Plumber/Pipefitter journeyman, a second Plumber/Pipefitter apprentice after the third Plumber/Pipefitter journeyman, and a third Plumber/Pipefitter apprentice after the fifth Plumber/Pipefitter journeyman. After five Plumber/Pipefitter journeymen, one Plumber/Pipefitter apprentice may be employed for each two Plumber/Pipefitter journeymen thereafter.

Service, Maintenance, Refrigeration and Air Conditioning apprentices may be dispatched to any contractor who is signatory to the Agreement. The employer may employ one Service, Maintenance, Air Conditioning and Refrigeration apprentice after the first Service, Maintenance, Air Conditioning and Refrigeration journeyman, a second Service, Maintenance, Air Conditioning and Refrigeration apprentice after the third Service, Maintenance, Air Conditioning and Refrigeration journeyman, and a third Service, Maintenance, Air Conditioning and Refrigeration apprentice after the fifth Service, Maintenance, Air Conditioning and Refrigeration journeyman. After five Service, Maintenance, Air Conditioning and Refrigeration journeymen, one Service, Maintenance, Air Conditioning and Refrigeration apprentice may be employed for each two Plumber/Pipefitter journeymen thereafter.

If there is any conflict between this and the Collective Bargaining Agreement, the Collective Bargaining Agreement shall prevail if approved by the Nevada State Apprenticeship Council. Any changes to lower the set Ratio must be approved by the State Council.

SECTION XVI

Related School Instruction

- A. Building Trades Plumber apprentices shall enroll in and attend related theoretical classes not less than 1230 hours during the term of apprenticeship, or an average of 246 hours per year during each year of the term.
- B. Service, Maintenance, Air Conditioning and Refrigeration apprentices shall enroll in and attend related theoretical classes not less than 800 hours during the term of apprenticeship, or 200 hours per year during each year of the term.
- C. Apprentices shall be expected to exercise the same diligence in their related classroom work as they do in the work on the job. The determination of the Joint Training Committee of an apprentice's progress and fitness for the trade shall be based in part on the proficiency shown in the subjects covered in the related classroom work as well as on the job.

- D. In cases of failure on the part of any apprentice to fulfill his or her obligations with respect to school attendance, deportment, or meeting mandatory requirements in a timely manner, the Joint Training Committee shall, after a hearing at which time the parties concerned shall be notified to appear, take such action as in its judgment the facts may justify. Under such circumstances, the Joint Training Committee may suspend employment of the apprentice for a period up to thirty (30) days or the apprentice's Apprenticeship Agreement may be terminated.
- E. Time spent in related instruction classes shall not be considered as hours of work and the apprentice shall not be compensated for attendance.
- F. All fees and absences in related instruction to be paid and made up before any advancement in the apprentice program. The required hours for apprentices as written in the apprenticeship standards are minimums. Individual class hours are approximate.

SECTION XVII COURSE OF INSTRUCTION

- A. The Joint Apprenticeship Training Committee shall develop a suitable course of instruction for the Building Trades Plumber and Service, Maintenance, Air Conditioning and Refrigeration Apprentices based upon the material and curriculum approved by the United Association. This course shall be supplemented with ~~at least one semester of~~ annual weld classes.
- B. Welding supplement shall apply only to the Building Trades Apprentices.
- C. Each apprentice shall receive first aid and safety training both in related instruction and on the job to insure becoming a safe and competent journeyman.

BUILDING TRADES PLUMBER APPRENTICE

CLASS DESCRIPTION	APPROXIMATE CLASS HOURS
Advanced Plan Reading I	30
Advanced Plan Reading II	36
Backflow	21
Basic Electricity	24
Basic Plans & ISO I	36
Basic Plans & ISO II	36
Code Interpretation	36
Drainage	40
Fitter certification	42
Fitter Layout	39
Foreman Certification	44
Gas Installations	40
Green Awareness	21
Heritage	16
History	9
Mark Breslin	20
Hydronics	39
Job Safety/Use and Care of Tools	40
Math I	40
Math IV (Trigonometry)	36
Mechanical Code	33
Medical Gas certification	45
Pipes, fittings and valves	20
Uniform Plumbing Code	40
Plumber certification	40
Pumps and Steam	36
Refrigeration	15
Related Science	40
Rigging/Signaling/Crane Safety	24
EPRI Rigging Certification	48
Safety Certifications (CPR, First Aid, Osha-10 Hr, Fire Extinguisher)	30
Service Work	36
Solder/Braze	21
Fixtures	40
Tube Bending	15
Water Supply	24
Weld /Cut I	40
Weld / Cut II	40
Weld / Cut III	39
Weld /Cut IV	39
Weld / Cut V	39
TOTAL HOURS	1230

SERVICE, MAINTENANCE, AIR CONDITIONING
AND REFRIGERATION APPRENTICE

CLASS DESCRIPTION	APPROXIMATE CLASS HOURS
Air Conditioning	30
Backflow	21
Basic Electricity	36
Basic Heat	40
Basic Refrigeration	38
Breslin Strategies for successful tradesmen	16
CFC certification	18
Customer Service	15
DC electronics	39
Electric Controls & Troubleshooting	72
Energy Auditing	
Equipment repair	39
Fittings and valves	24
Heritage	16
Job Safety/Use and Care of Tools	40
Related Math	40
Mechanical Code	30
Solder/ Brazing	24
Oil Furnace & Code	9
Pneumatics	36
Pumps and Motors	36
Refrigeration 2	38
Rigging, Signaling & Crane Safety	16
Safety Certifications (CPR, First Aid, Osha-10 Hr, Fire Extinguisher)	30
Start, Test and Balance	33
Water Supply	24
Welding	40
TOTAL HOURS	800

Building Trades Plumber Course Description

Assessment of comprehension of all written material will be done by chapter review tests, periodic quizzes and final tests covering all material given. Certification tests will be given and must be passed.

Instructor evaluation and testing must be passed on all “Hands-on” lab and welding classes given as well as any required written assessments.

First Year – 250 hours

I. First Year Apprentice Training

These courses will provide a general introduction to our industry while also preparing the apprentice for subsequent training. The apprentice will receive instruction in several areas allowing for him to become familiar with as much of our trade as possible so that he or she might become an asset to any employer as soon as possible. These areas will include job safety, use and care of tools, recognition of pipe and fittings and related material, trade-related math, trade-related science, rigging, drawing and blueprint reading, soldering, brazing and basic electricity and an introduction to shielded metal arc welding. Also included, as mandated by the United Association, will be instruction in the history of the Union movement, U.A. heritage and the responsibilities of today's union members. There will also be presentations from various guests on certain aspects of the trade and our community. The apprentice must obtain First Aid and OSHA certifications to advance to the 2nd step raise.

Building Trades Apprenticeship Curriculum First Year (Approximate hours)

Subject	Texts	Hours	Instructor
Basic Rigging and Signaling	Rigging Handbook	30	TBD
Heritage	Standard for Excellence	20	
Job Safety and Use & Care of Tools	Job Safety and Health and Use & Care of Tools	20	
Safety Certifications- First Aid,	OSHA 10	20	
Pipes and Fittings	Pipes, Fittings, Valves, Supports and Fasteners	20	
Breslin	Breslin Strategies for Apprentices	16	
Solder/Braze	Soldering and Brazing Manual	24	
Trade Math	Related Mathematics	40	
Weld Cut I	Oxy –Fuel Cutting & Welding & Shielded Metal-Arc Welding	40	

Texts-

- Breslin Strategies for Apprentices
- Drawing Interpretation and Plan Reading
- Job Safety and Health

- Oxy Fuel Welding
- Pipes, Fittings, Valves, Supports and Fasteners
- Rigging Manual
- Soldering and Brazing Manual
- Use and Care of Tools Manual
- Standard for Excellence

Published by: International Pipe Trades Joint Training Committee, Inc., Landover MD

- Rigging Handbook, The complete illustrated field reference, Second Edition

Published by: ACRA Enterprises, Inc, Stevensville MI

Building Trades Course Description
Second Year – 240 hours

I. Second Year Apprentice Training

These courses will provide an introduction to science as it relates to the piping industry; knowledge and skills necessary to install a complete potable water system, knowledge and skills necessary to install a complete sanitary, stormwater, vacuum and graywater drainage system; servicing and repairing of these systems, instruction in basic electricity as it applies to piping installations, installation of natural and LP gas systems, principles and requirements of state, local or provincial codes, a background in the field of service work stressing special installations and training in shielded metal arc welding.

Building Trades Plumber Apprenticeship Curriculum
Second Year(Approximate hours)

Subject	Texts	Hours	Instructor
Plumbing Fixtures	Plumbing fixtures/Installations	20	TBD
Code	Current Adopted UPC Code Book	40	
Drainage	Drainage	40	
Gas Installation	Gas Installation	40	
Related Science	Related Science	40	
Service Class	Plumbing Service	20	
Water Supply	Water Supply	20	
Weld/Cut II	Oxy Fuel Welding	40	

Texts-

- Related Science
- Drainage
- Plumbing Fixtures and Specialty Installations
- Water Supply
- Gas Installation
- ~~A Guide to Service Work~~
- Oxy-Fuel Cutting & Welding & Shielded Metal-Arc Welding

Published by: International Pipe Trades Joint Training Committee, Inc., Landover MD

- Current Adopted Uniform Plumbing Code Book, An American National Standard, IAPMO/ANSI UPC

Published by: International Association of Plumbing and Mechanical Officials, Ontario CA

Building Trades Plumber Course Description

Third Year – 246 hours

I. Third Year Apprentices Training

These courses will provide the ability to understand building plans and specifications, a more in depth study of the principles and requirements of state, local or provincial codes, training in the types of plumbing fixtures and how to rough-in and set them and further training in shielded metal arc welding, basic knowledge of heating and air conditioning systems. Topics will include pumps, steam systems, boilers, hydronic systems, central air systems and industrial pipefitting installations.

Emphasis will be given to the systems, which are especially applicable to our local jurisdiction. An exposure to the basic refrigeration process and terms that will be expanded on later. Introduction of Mechanical Code in preparation for manometer certification.

Building Trades Apprenticeship Curriculum Third Year(Approximate hours)

Subject	Texts	Hours	Instructor
Basic Plans/ISO II	Drawing Interpretation and Plan Reading	40	TBD
Code Interpretation	Current Adopted UPC Code Book	40	
Hydronics	Hydronic Heating & Cooling	40	
Mechanical Code	Current Adopted Uniform Mechanical Code UMC Student Workbook	40	
Pumps/Steam	Pumps and Steam Systems	28	
Refrigeration	Refrigeration Manual for Steamfitter Pipefitter Apprentices	18	
Special Fixtures	Plumbing Fixtures & Appliances	40	
Weld/Cut III	Oxy –Fuel Cutting & Welding & Shielded Metal- Arc Welding	40	

Texts-

- Drawing Interpretation and Plan Reading
- Hydronic Heating & Cooling
- Pumps and Steam Systems
- Refrigeration Manual for Steamfitter Pipefitter Apprentices
- ~~Plumbing Fixtures & Appliances~~
- Oxy-Fuel Cutting & Welding & Shielded Metal-Arc Welding

Published by: International Pipe Trades Joint Training Committee, Inc., Landover MD

- Current Adopted Uniform Plumbing Code Book

Published by: International Association of Plumbing and Mechanical Officials, Ontario CA

- Current Adopted Uniform Mechanical Code
- UMC Student Workbook

Published by: International Association of Plumbing and Mechanical Officials, Ontario CA

Building Trades Plumber Course Description

Fourth Year – 246 hours

I. Fourth Year Apprentice Training

These courses will provide skills in advanced drawing and coordination, sketching and sleeve drawings, the understanding of medical gas systems and training required to be certified as a qualified brazer/installer, the understanding of backflow prevention and cross-connection control. Pipe fitter certification consists of but is not limited to welding, rigging, instrumentation and refrigeration. Representatives from many different manufacturers and industry people do presentations to familiarize the apprentices with the most current devices and the apprentices are able to attend elective classes. All apprentices must pass both the Medical Gas Certification tests and PIPE Fitter Certification test to advance to 9th step raise.

Building Trades Apprenticeship Curriculum Fourth Year(Approximate hours)

Subject	Texts	Hours	Instructor
Trigonometry	Trigonometry	40	TBD
Weld/Cut IV	Oxy –Fuel Cutting & Welding & Shielded Metal-Arc Welding	40	
Medical Gas Certification	2005 NFPA 99 or current issue	50	
Pipefitter Certification	Ordinances for 1000 Pipe Intersections IPT's Pipe Trades Handbook	40	
Backflow	Backflow Prevention Ref Manual	20	
Green Systems Awareness	Green Awareness Training Manual	20	
Plumbing Service	Service, Maintenance, and Repair	40	

Texts-

- Related Math
- Oxy-Fuel Cutting & Welding & Shielded Metal-Arc Welding
- Advanced Plan Reading & Related Drawing
Published by: International Pipe Trades Joint Training Committee, Inc., Landover MD
- Current Adopted Uniform Plumbing Code Book
Published by: International Association of Plumbing and Mechanical Officials, Ontario CA
- 2015 NFPA 99 or current edition
Published by: National Fire Protection Association, Batterymarch Park, Quincy MA
- Plumbing Service Maintenance and Repair Manual
- Ordinates for 1000 Pipe Intersections by S.D. Bowman
Published by: Claitor's Publishing Division, Baton Rouge LA
- IPT's Pipe Trades Handbook
Published by: IPT Publishing and Training Ltd., Alberta Canada

I. Fifth Year Apprentice Training

These courses will provide further skills in advanced drawing and coordination, sketching and sleeve drawings; leadership and supervisory development, opportunity to obtain Welder certifications, fabrications of piping intersections and offsets, making of templates and their use, trade mathematics, methods of laying out angles, offsets and other appropriate fittings. The apprentice will prepare the fabrications, fit and tack them but not weld them and they will take a more complete study course in preparation for the manometer certification test and a comprehensive understanding of the current uniform plumbing code including sizing of all applicable systems.

Building Trades Apprenticeship Curriculum
Fifth Year(Approximate hours)

Subject	Texts	Hours	Instructor
Advanced Plan Reading II	Advanced Plan Reading & Related Drawing	40	TBD
Fitter Layout	IPT manual	40	
Foreman Certification	Foreman Certification Manual	40	
Rigging Certification	Rigging Manual and Handbook	60	
Plumber Certification	UPC Code Book Current Edition UPC Study Guide Current Edition	40	
Weld/Cut V	Oxy –Fuel Cutting & Welding & Shielded Metal-Arc Welding	40	

Texts-

- UA Foreman Certification Manual
- Related Math
- Advanced Plan Reading & Related Drawing
- IPT Manual
- Oxy –Fuel Cutting & Welding & Shielded Metal-Arc Welding

Published by: International Pipe Trades Joint Training Committee, Inc.

- Current Adopted UPC Code Book
- Current Adopted UPC Study Guide

Published by: International Association of Plumbing and Mechanical Officials, Ontario CA

Please note all texts will be the current editions available for all years and classes.

Service, Maintenance, Air Conditioning and Refrigeration Course Description

Assessment of comprehension of all written material will be done by chapter review tests, periodic quizzes and final tests covering all material given. Certification tests will be given and must be passed.

Instructor evaluation and testing must be passed on all “Hands-on” lab and welding classes given as well as any required written assessments.

First Year – 250 hours

I. First Year Apprentice Training

The objective of the first year of training is to provide the apprentice with study skills, current classroom technology techniques, an overview of safety, skills in the use and care of tools and training in related mathematics. The curriculum for first year apprentices has been developed with certain specific instructional objectives in mind. First, it is essential that apprentices receive a comprehensive exposure to basic safety, science, and mathematical fundamentals, as well as learn about the main fittings, valves, and tools they will be working with. With these basic tools to assist in their learning process, apprentices employed in the mechanical equipment servicing field will have a far greater ability to understand the principles of operation of the many types of equipment with which they will likely come in contact. More importantly, they will possess a far greater ability to educate themselves in the many sub-disciplines, which make up the whole of this trade and an introduction to fundamentals of refrigeration. They will also take Your Heritage and Future in the Pipe Trades, which deals with the history of the labor movement and specifically, the history of the United Association's evolution.

Service, Maintenance, Refrigeration and Air Conditioning Curriculum First Year(Approximate hours)

Subject	Texts	Hours	Instructor
Basic Rigging and Signaling	Rigging and Signaling manual and Handbook	30	TBD
Heritage	Standard for Excellence	20	
Job Safety and Use & Care of Tools	Job Safety and Health and Use & Care of Tools	40	
Safety Certifications- First Aid,	OSHA 10 hr certification	20	
Pipes and Fittings	Pipes, Fittings, Valves, Supports and Fasteners	20	
Breslin	Breslin Strategies for Apprentices	16	
Solder/Braze	Soldering and Brazing Manual	24	
Trade Math	Related Mathematics	40	
Weld Cut I	Oxy –Fuel Cutting & Welding & Shielded Metal-Arc Welding	40	

Texts-

- Breslin Strategies for Apprentices
- Drawing Interpretation and Plan Reading
- Job Safety and Health

- Oxy Fuel Welding
- Pipes, Fittings, Valves, Supports and Fasteners
- Rigging Manual
- Soldering and Brazing Manual
- Use and Care of Tools Manual
- Standard for Excellence
- Published by: International Pipe Trades Joint Training Committee, Inc., Landover MD
- Rigging Handbook, The complete illustrated field reference, Second Edition
- Published by: ACRA Enterprises, Inc, Stevensville MI

Service, Maintenance, Air Conditioning and Refrigeration Course Description Second Year – 200 hours

I. Second Year Apprentice Training

The objective of the second year of training is a continuation of the material covered in the first year. The apprentices pursue the operating principles in greater detail and gain an understanding of their application to the components, which make up the vapor compression cycle. Also, analogy by various refrigerant pressure enthalpy diagrams and tables is made to assure a thorough understanding of the operation of system components. They must also learn how to deal with the many different uses and forms of electricity and its multiple different uses in HVAC equipment.

Apprentices must understand that they will be required to develop a unique blend of both technical and interpersonal skills if they are to achieve success in this field. It is essential they understand that, as a journey person, they will be expected to act as stand-alone service persons who are able to handle customer dealings with skill and professionalism. As a consequence, their communication skills and personal appearance are of great importance. Jobsite safety and health are essential to all construction programs and is stressed here. Considerable time is allocated to shop training sessions, which are structured to augment classroom presentations. In the controlled environment of the shop, apprentices work with functional air conditioning and refrigeration systems and gain exposure to the equipment, which can only be theoretical concepts in the classroom.

Apprentices receive Environmental Protection Agency (EPA) conservation and Safe Handling of Refrigerants Certification training, including practical performance evaluation of their ability to operate a refrigerant recovery machine, prior to taking the EPA Section 608 Certification Examinations.

Service, Maintenance, Air Conditioning and Refrigeration Curriculum Second Year (Approximate hours)

Subject	Texts	Hours	Instructor
Refrigeration 1	HVAC and Refrigeration Systems Training Manual	38	TBD
Refrigeration 2	HVAC and Ref. Training Manual	38	
Conservation and Safe Handling of Refrigerants EPA Certification	Conservation and Safe Handling of Refrigerants	38	

Core, Type I, Type II, Type III and Universal			
Mechanical Code	UMC Code Book UMC Study Guide	30	
Basic Electricity	Basic Electricity Training Manual	38	
Basic Heat Systems	HVAC and Ref. Training Manual	38	

Texts-

- HVAC and Refrigeration Systems Training Manual
- Conservation and Safe Handling of Refrigerants
- Basic Electricity Training Manual
- UA/MSCA Customer Service Skills (CSS Booklet)

Published by: International Pipe Trades Joint Training Committee, Inc., Landover MD

- UMC Code Book
- UMC Study Guide

Published by: International Association of Plumbing and Mechanical Officials, Ontario CA

Service, Maintenance, Air Conditioning and Refrigeration Course Description Third Year – 200 hours

I. Third Year Apprentice Training

The third year curriculum reflects the importance of the role that electronic controls occupy in the mechanical equipment-servicing field. A major portion of the time spent in the third year is dedicated to the teaching of basic DC electronics.

It is generally recognized that virtually every piece of air conditioning, refrigeration or heating equipment manufactured today uses some type of electronic control. Although this development has improved the reliability and durability of today's heating and cooling equipment, it has also placed an ever-increasing demand upon service journeyworkers to continually upgrade their skills in an effort to stay abreast of these industry changes.

There will also be a continuation of customer service skills, which is a very important service technician's tool.

Service, Maintenance, Air Conditioning and Refrigeration Curriculum Third Year (Approximate hours)

Subject	Texts	Hours	Instructor
Duct Zoning and Balance	Start, Test and Balance, Manufacturer Literature	33	
Start, Test & Balance	Start, Test and Balance Manual	38	
Digital Controls Electronics	DC Electronics Textbook DC Electronics Workbook Parts Pack Analog trainer	39	
Basic Heat 2	HVAC Systems Manual	38	
Related Science	Related Science	33	
Hydronic Heating	Hydronic Heating Book	38	

Texts-

- Hydronic Heating
- Related Science
- HVAC and Refrigeration Systems Training Manual
- Start, Test, and Balance

Published by: International Pipe Trades Joint Training Committee, Inc., Landover MD

- DC Electronics Textbook
- DC Electronics Workbook
- Parts Pack
- Analog Trainer

Published by: Heathkit Educational Systems, Benton Harbor MI

Service, Maintenance, Air Conditioning and Refrigeration Course Description
Fourth Year – 200 hours

I. Fourth Year Apprentice Training

The fourth year brings together a number of previously covered areas of instruction. In particular, control theory is applied to operating systems and types of control applications are covered in detail and control terms are defined and electrical control wiring diagrams and interpretation are revisited and expanded.

Refrigeration equipment and applications such as supermarket installations, low temperature applications, compound compression systems, cascade and ultra-low temperature systems will be covered.

The fundamental operating concept of pneumatic controls, centrifugal and absorption cooling (lithium-bromide and water-ammonia systems) is detailed.

Customer service skills are second only to the knowledge of all systems for all service technicians and during the fourth year the necessary skills are fine tuned.

Service, Maintenance, Air Conditioning and Refrigeration Curriculum
Fourth Year(Approximate hours)

Subject	Texts	Hours	Instructor
Pumps/Motors	Pumps	36	TBD
Steam Systems	Steam Systems Manual	21	
Electric Controls	Electric Controls for Mechanical Equipment Service	36	
Pneumatic Controls	Pneumatic Controls	36	
Equipment Repair	Hands on	39	
Gas Installations	Gas Installations	38	

Texts-

- Steam Systems
- Pumps
- Drawing & Interpretation Kit

- Pneumatic Controls
- Electric Controls for Mechanical Equipment Service

Published by: International Pipe Trades Joint Training Committee, Inc., Landover MD

SECTION XVIII Periodic Examinations

Before each period of advancement each apprentice shall be evaluated by the Joint Apprenticeship Training Committee, and/or until their required hours are obtained on-the-job as well as related instruction. If an apprentice fails to show in these evaluation periods that he or she is entitled to advancement, he or she may be held in the same period until meeting requirements. Failure to qualify for advancement a second time during his or her time of apprenticeship shall be cause to terminate his or her Apprenticeship Agreement.

SECTION XIX Continuous Employment

- A. It shall be the duty and responsibility of the Joint Apprenticeship Training Committee to provide, in so far as possible, continuous employment to all apprentices. This may necessitate the transfer of apprentices from one employer to another. Such transfer must be made in the best interest of both the Employer and the Apprentice, and all transfers require the approval of the Joint Apprenticeship Training Committee.
- B. If an apprentice is out of work for any reason beyond their control, such as a strike, lockout, or loss of business, the requirement of school attendance shall remain the same, and in full force and effect. Apprentices who have been laid off for the reason stated above shall be re-employed in reverse order to that in which they were laid off.

SECTION XX Disposition of Complaints

All grievances, or complaints regarding wages, type of training, etc., are to be brought before the Joint Apprenticeship Training Committee. They must be received in writing within thirty (30) days at the Training Center office, 1150 Greg Street, Sparks, Nevada. The Committee will then give the apprentice a hearing and if justified, every effort will be made to rectify any problems.

SECTION XXI Joint Apprenticeship Training Committee Fund

The purpose of the fund is for the administration of Apprenticeship System as established herein and administered under a trust committee.

SECTION XXII Certificate of Completion of Apprenticeship

The Joint Apprenticeship Training Committee shall certify the names of apprentices who have satisfactorily completed the requirements of apprenticeship to the Nevada

Apprenticeship Council and the U.S. Department of Labor, Office of Apprenticeship within 10 days and recommend that a Certificate of Completion of Apprenticeship be awarded.

SECTION XXIII Equal Opportunity Pledge

UA Local 350 Pipe Trades Apprenticeship programs will not discriminate against apprenticeship applicants or apprentices based on race, color, religion, national origin, sex (including pregnancy and gender identity), sexual orientation, genetic information, or because they are an individual with a disability or a person 40 years old or older. UA Local 350 Pipe Trades Apprenticeship programs will take affirmative action to provide equal opportunity in apprenticeship and will operate the apprenticeship program as required under Title 29 of the Code of Federal Regulations, part 30.

SECTION XXIV Saving Clause

As used in these standards, the masculine, feminine, or neuter gender, and the singular or plural number, shall each be deemed to include the others whenever the context so indicates.

SECTION XXV Modification of these Standards

Rapid changes in the Building Trades Industry, Service Plumber and Maintenance, Refrigeration and Air Conditioning Industry may require modifications or revision of these standards. Such modifications, when adopted, shall be made a matter of record with the Registration Agency, after they have been approved by the registration agency.

SECTION XXVI Rules and Policies

The rules and policies of the Committee as presently in existence or as may be adopted from time to time shall have full force and effect under these standards.

SECTION XXVII Registration, Cancellation, De-Registration of Apprentice Standards

These apprenticeship standards may be revised at any time by the action of the Joint Training Committee and approval of the sponsoring parties. Copies of any revisions must be registered and approved by the registration agency before becoming effective.

SECTION XXVIII
Joint Apprenticeship Training Committee
Approval of Standards

These Apprenticeship Standards have been amended this ____ day of _____, 2018.

Representing the Nevada Association of Mechanical Contractors:

Craig Madole

Charles Beaupre

Danny Robinson

Michael Scolari

Representing the United Association of Journeymen and Apprentices:

Chris Doris

Freddy Sheehan

John Roelle

Daniel Dupree

Approved and accepted by the U.A. of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry, Local No 350.

Business Manager:

Chris Doris

The forgoing Apprentice Standards, being in conformity with the rules and regulations of the Nevada Apprenticeship Council, are hereby approved this ____ day of _____, 2018.

Director of Apprenticeship