



PLUMBING PATHWAY

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For further information on non-discrimination policies and procedures, visit your local CTE Center website, visit <https://ocrcas.ed.gov/contact-ocr> for the address and phone number of the Civil Rights office that serves your area, or call 1-800-421-3481.



What are the Requirements

- High School Diploma or Equivalent
- Apprenticeship
- Math, Science, Computer Skills
- Algebra, geometry, and trigonometry
- Physics, chemistry
- High Mechanical Aptitude
- Enjoy hands on work
- Ability to use hand and power tools
- Good hand-eye coordination
- Be in good physical condition
- Ability to lift and move heavy items
- Be comfortable working in awkward spaces
- Residential Plumbers
- Have great Customer Service Skills
- Have good customer service and communication skills
- Able to work well with other members of the Construction Industry
- Ability to work alone and as part of a group
- May be working with General Contractors, Electricians, Manufacturing Professionals when working on a new construction
- Patience
- Both with customers and finding the issues

Duties of the Job

- Pipe Work
 - Measure and mark pipes for cutting
 - Cut, thread and bend pipes
 - Install pipes, valves and fittings
 - Knowledge of different pipe materials
- Test lines to ensure they are up to the local code



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- Following building plans and blueprints and plumbing systems
- Install equipment like water heaters, boilers, gas appliances, toilets, sinks
 - Responding to, diagnosing, and resolving emergency across job sites and at all hours
- Installing, troubleshooting, maintaining, and repairing appliances, water, gas, drainage, and sanitation systems
 - Performing routine inspections of plumbing systems
- Understanding the flow of water
- Preparing bids, budgets, and cost estimates
- Keeping accurate records of time working
 - Description of work performed and materials used
- Knowing and working within safety regulations
- Working in Residential, Commercial, Industrial, and institutional Plumbing Systems
 - Residential
 - Water lines that measure up to 2.5 inches in diameter
 - Small lines and are used to carry water through the home
 - Vent lines and drain lines for the home
 - Industrial, Commercial, Industrial
 - Large water lines and drain systems that are present in schools, hospitals, factories, and malls
 - Need a more advanced understanding of
 - Blueprint reading
 - Pipe design
 - Shut-down procedures

Types of Plumbers

- General Plumbers
 - Repair the water, waste disposal, drainage, and gas systems in homes, commercial, industrial buildings
 - Understand water distribution and disposal systems in residential, commercial, industrial settings
 - Working knowledge of heating and ventilation systems as well as appliances
 - Reading blueprints and drawings to plan the layout



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- Cutting assembling and installing pipes and tubes
- Maintenance and installation of plumbing fixtures
 - Bathtubs
 - Sinks
 - Showers
 - Toilets
 - Dishwashers
 - Waste disposers
 - Water heaters
 - Gas and liquid heating systems
 - A/C
- Pipefitters
 - After Apprenticeship will need a Journeyman Pipefitter license
 - After 2000 hours can apply for a Master Pipefitter license
 - Work in the Industrial Sector
 - Assemble and maintain mechanical piping systems designed to withstand high pressure
 - Pipes that they use could be used to carry chemicals, acids and gases across manufacturing, commercial and industrial industries
 - Must be able to find diagnose and repair problems.
 - Should be comfortable setting up and testing new piping systems
 - Will be doing a lot of welding
 - Could be doing
 - Threading
 - Grinding
 - Cutting
 - Rigging
 - Brazing
 - Soldering
 - Bending
 - Installation and monitoring the controls of
 - Boilers
 - Furnaces
 - Water tanks
 - Other pressurized equipment
- Steamfitters
 - Able to work in Residential, Commercial and Industrial



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- Work on the same systems as pipefitters
 - Their focus strictly on installing pipes that will be carrying high pressure gases and liquids
- Develop, plan and sketch the layout of the pipe systems
 - Building and installing pipes
 - Ensuring that they are securely attached to a wall or structure
- Inspect and maintain the pipe systems
- Work with hydraulic and pneumatic equipment for heating and cooling systems
- Sprinkler fitters
 - Will work in Residential, Commercial, and Industrial
 - Collaborate with contractors, architects, and others
 - Install, modify and inspect sprinkler systems
 - Must pay attention to building and NFPA (National Fuel Gas Code)code regulations
 - [2021 National Fuel Gas Code Fact Sheet - American Gas Association \(aga.org\)](#)
 - This relates to the space between sprinklers, pipe size, and amount of pressure each pipe can handle
 - Will need to solder and weld pipes, tubes and fittings for sprinklers
 - Will inspect, test, troubleshoot and repair fire sprinklers
- Pipelayers
 - Will need to have knowledge of construction and pipe fitting techniques
 - Will be working outside in all types of weather
 - Responsible for assembling and connecting pipe systems for water mains, sewers, and drains
 - Perform the initial groundwork before laying pipes
 - used for sewer lines
 - natural gas
 - oil pipelines
 - large water lines
 - will work with clay, concrete, plastic or cast iron pipe
 - They will prepare and grade the trenches either manually or with machines before laying the pipe
 - They will seal pipes
 - Use magnetic or radio indicators to locate installed piping systems
 - Filling and sealing pipe trenches



Licensing

- Need to show proof of 3 hours of code update every year totaling 6 hours per 2-year renewal cycle
- 3 hours to test
- Can bring in Reference Material, calculator, (not your cell phone) and should bring in the Current Code Book
 - Can have Highlighting and Pen Only
 - Can have permanent tabs on the material
- May be retaken as many times as necessary
 - No waiting period

- Journeyman License
- Requires biennial renewal and has a fee of \$180 each time
 - Must be 18 years old
 - Completed 8000 OJT Hours
 - Obtain an Apprenticeship Completion Certificate
 - Copy of your Apprentice Card
 - A letter signed by a Master Plumber stating that you worked under them and that you are competent to become a Journeyman
 - Submit an application to Mechanical and Safety
 - [Mechanical Safety and Licensing Board | NH Office of Professional Licensure and Certification](#)
 - Application
 - [Applications for Mechanical Safety and Licensing | NH Office of Professional Licensure and Certification](#)
 - Testing Requirements
 - You must receive a 70% or higher to pass the test
 - There are two testing providers in NH
 - Must be completed in person
 - NH Gasfitters
 - This test is valid for Journeyman and Master Plumber
 - You will be given a binder with the current Code Book
 - Will be returned after exam



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- Can not use your own Code Book or notes
 - They have 2 Testing Locations
- Manchester, NH
- Hampton, NH
- [NH Journeyman & Master Plumbing Plumbing Exams - NH Gasfitters Plumbing - Gasfitting Exams & Continuing Education](#)
- Prov Inc
 - They have five testing centers in NH
 - Concord, NH
 - Gorham, NH
 - Nashua, NH
 - New Loudon, NH
 - Hampton, NH
 - You can bring approved reference materials
 - Nothing hand written, no moveable tabs, etc
 - They have three tests
 - First Year Apprentice Bypass
 - Journeyman Plumbing
 - Master Plumber
 - [New Hampshire Mechanical \(provexam.com\)](#)
 - Need to show 3 hours each year of Continuing Education
- Master or Contractor License
 - Require a biennial renewal and a fee of \$300
 - Must meet the requirements for both Apprentice Plumber and Journeyman Plumber licenses
 - Must be a Master Plumber to own and run a plumbing business
 - Must be 18 years old
 - Hold a Journeyman Plumber's license for at least 6 months
 - Submit an application
 - \$310 fee
- Continuing Education Requirements
 - To be done every 2 years
 - 500 hours each year of Continuing Education



- 20 hours related to water conservation practices and sustainability

Career and Technical Education (CTE) Centers with Plumbing Programs

- Huot Technical Center
 - Laconia, NH
 - [Plumbing/Heating - Huot CAREER and Technical Center \(weebly.com\)](http://weebly.com)
 - Year 1
 - Learn and demo the basic skills that are essential in plumbing and HVAC
 - Will be introduced to basic state plumbing codes
 - Work towards OSHA 10
 - Must complete to enter Plumbing, Heating and HVAC Technologies
 - Spring can work offsite on various Parks and Rec buildings as they open
 - Year 2
 - Completing this year will allow you to enter your Plumbing Apprenticeship as a 2nd year Apprentice
 - You could earn 3 College Credits for MCC for HVAC 101
- Manchester School of Technology (MST)
 - Manchester, NH
 - [Residential Plumbing | Manchester School of Technology \(mansd.org\)](http://mansd.org)
 - Must be 16 years old by November of the First Year
 - Residential Plumbing
 - Plumbing 1
 - Exposed to hand and power tools of the trade, piping materials (PVC, Cooper)
 - Learn how to hard and soft solder, using oxyacetylene, liquid propane
 - Will work with other MST Construction students to completely construct a residential building
 - Plumbing II



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- Will be exposed to different hydronic gas systems, both oil and fire
- Learn how a Beckett oil burner operates
- Installation of a forced hot water oil fired (oil tank) heating system
 - Including all piping and electrical in a home
- Can apply 720 classroom hours to your Apprenticeship

High School Steps

- Talk with your school counselor or ELO coordinator about shadowing a plumber as they work for a day
- Interview an electrician and ask them about what they like about the job
- Pass Algebra with at least a “C”
- Enroll in a CTE Plumbing Program

Post Secondary Education

- Laconia High School
 - Adult Education
 - [Plumbing Apprentice - LACONIA ADULT EDUCATION \(weebly.com\)](http://www.plumbingapprentice-laconia-adult-education.weebly.com)
 - Holds Plumbing Apprenticeship Courses
 - Plumbing I
 - Plumbing II
 - Plumbing III
 - Plumbing IV
 - Each Year will have 156 hours per year equaling the required 600 classroom hours
 - Classes will meet Monday and Wednesday nights from 6-9PM
 - Classes run September to April
 - Will need to get an Apprenticeship with On-the-Job Training on your own
- Keene Community Education



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- [Plumbing-Appr-handout.pdf \(keenecommunityed.org\)](http://keenecommunityed.org/Plumbing-Appr-handout.pdf)
- Offers 150 classroom hours per year
- 10 Hour Construction OSHA (Occupational Safety and Health Administration) course

Year/Course	Topics Covers
Year 1	<ul style="list-style-type: none"> • Core Curriculum Intro Craft Skills • Intro to the Plumbing Profession • Intro to Plumbing Math • Plumbing Tools • Plumbing Safety • Blueprints and Plumbing Drawings • Various Pipes and Fittings • Fixtures and Faucets • Intro Drain, Waste and Vent (DWV) Systems • Intro Water Distribution Systems
Year 2	<ul style="list-style-type: none"> • Intermediate Math • Reading Commercial Drawings • Installing and Testing Water Supply and Piping • Installing Fixtures, Valves, and Faucets • Intro to Electricity • Installing Water Heaters • Fire Stops and Structural Penetrations • Servicing Fixtures, Valves and Faucets
Year 3	<ul style="list-style-type: none"> • Applied Math • Water Pipe Sizing • Potable Water Treatment • Back Flow Preventers • Types of Venting • Sewage and Sump Pumps • NFPA (National Fuel Gas Code) 54 • Sizing DWV and Storm Systems • Corrosive-Resistant Waste Piping • International Plumbing Code
Year 4	<ul style="list-style-type: none"> • Water Pressure Booster and Recirculation Systems



	<ul style="list-style-type: none"> • Indirect and Special Waste • Servicing Piping Systems, Fixtures and Appliances • Private Water Supply Systems • Hydronic and Solar Heating Systems • Water Supply Treatment • Swimming pool and Hot Tubs • Plumbing for Mobile Home Parks • International Plumbing Code
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- Granite State Trade School
 - Raymond, NH
 - https://granitestatetradeschool.com/course_type/plumbing-apprentice-program/
- Partnered with Nation Plumbing-Heating-Coding Contractors-Educational Foundations
- Allows for 2 different options
- In-person Classroom
 - 2 nights a week
 - 6-8PM
- Hybrid online and in-person
 - (E-Learning Mentoring Program)
 - Must attend the required mentoring sessions at the school
 - Must take the Final exams in person
 - The hybrid model does not include the textbook
- They offer a free PHCC Academy HVAC & Plumbing Pre-Apprenticeship Course

[PHCC Home - PHCC \(phccweb.org\)](http://phccweb.org)

Class	Topics Covered
Plumbing 101	<ul style="list-style-type: none"> • Intro to Plumbing Trade • Plumbing Math Concepts • Interpreting Basic Construction Drawings
Plumbing 201	<ul style="list-style-type: none"> • Water Distribution System



	<ul style="list-style-type: none">• Sizing of Water Distribution and DWV Systems• Plumbing Math Concepts• Interpreting Trade Drawings and Sketches• Venting Systems• Safety Concepts
Plumbing 301	<ul style="list-style-type: none">• Fixtures and Appliance Installation• Blueprints• Drawings and Plans• Fuel Gas Piping Systems• Advanced Math Concepts• Electrical Concepts
Plumbing 401	<ul style="list-style-type: none">• Service and Repair Techniques• System Sizing Using Blueprints• Protecting the Water Supply• Heating Systems• Pumps• Plumbing Code

- OSHA Training
 - [Home | Occupational Safety and Health Administration \(osha.gov\)](https://www.osha.gov)
- This is a 10-hour course
 - There are required and elective topics
 - This course is going to provide an entry level construction worker with information about their Rights, employer responsibilities, how to file a complaint, how to identify, abate, avoid and prevent job related hazards
 - Offers Plumbing Test Prep



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- License Exam for Journeyman and/or Master Plumber
 - A complete review of the questions and topics covered on the licensing exam
 - A full review of the IPC and provide you with an Exam study resource to take home and study
- This is a 2 day course 9-3PM

- Advanced Trade School
 - [Plumbing License | Advanced TradeSchool](#)
 - Brentwood, NH
 - Offers a 4-year hybrid model
 - You will be working at your own pace with periodic quizzes and module tests
 - Will need to get your Apprenticeship for the On-The-Job Training separately

Course	Covered Topics
Plumbing Year 1	<ul style="list-style-type: none">• References on manufacturer’s life expectancy of personal proactive equipment• Safety coverage of fall protection in and around trenches• Power tools• Joining technologies• ADA mounting heights• Green plumbing methods



Plumbing Year 2	<ul style="list-style-type: none">• Plumbing Math formulas• Reading Commercial Drawings• Structural penetrations• Insulation and Fire Stopping• Installing and Testing DWV Piping• Installing roof, floor, area drains• Installing and testing water supply piping• Types of valves• Installing fixtures and valves• Installing water heaters• Basic electricity• Fuel Gas and Fuel Oil Systems
Plumbing Year 3	<ul style="list-style-type: none">• Applied Math• Sizing Water Supply Piping• Portable Water Treatment• Backflow Preventers• Types of Venting• Sizing DWV and Storm Systems• Sewage Pumps and Sump Pumps• Corrosive-Resistant Waste Piping• Compressed Air



Plumbing Year 4	<ul style="list-style-type: none">• Business Principles for Plumbers• Introductory skills for the Crew Leader• Water Pressure Booster and Recirculation Systems• indirect and Special Waste• Hydronic and Solar Heating Systems• Codes• Servicing Piping Systems-Fixtures and Appliances• Private Water Supply Well Systems• Private Waste Disposal Systems• Swimming and Pools and Hot Tubs• Plumbing for Mobile Homes and Travel Trailers
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- NH Trades School
 - <https://nhtradeschool.com/>
- Plumbing 101
 - Takes place both Day and Night
- There is a payment plan available
- This is a Pre-Apprentice Course
 - Will provide the skills that you need to go through the Application and Interview process
 - Instruction on general plumbing practices, terminology, Repairs, every day tools, safety, basic venting, drainage systems, basic soldering techniques
 - Doesn't count towards Apprenticeship hours
 - You will gain a greater understanding about what it is to be a plumber
 - You will complete your needed OSHA 10 course
- Apprenticeship Courses



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- This is for the working Apprentice
- You will need your own Sponsor(Master Plumber) to work under
 - Must have an Apprentice Card
- Must complete the courses in order
 - Each course will be 160 hours
 - 6 hours of Plumbing Safety
 - 150 Classroom instruction time
 - Meets 2 nights a week for 20 weeks

Apprenticeships

- 4-5 years long
- Having an Apprenticeship Agreement on file
 - Without this your On-the-Job (OJT) hours may not count
- 8000 hours of OJT
 - Must keep track of your own paperwork and hours for the full 4-5 years
 - Submit to the Office of Apprenticeship when Record Books are complete
 - Copy the final months entry with the previous 12 months
 - A new Record Book will be forwarded to the employer
 - [Earn As You Learn, Hire Skilled Workers | ApprenticeshipNH](#)
- 144 hours of classroom training hours
- Must be 16 years old
- Have a High School Diploma or equivalent
- Be a US Citizen or hold Permanent Resident Status
- There is a fee of \$90 to register as an Apprentice
- Must obtain an Apprentice Card
 - Carried at all times, can be asked to show at any time
 - This will need to be renewed yearly
 - Must have an Apprenticeship Agreement on file
 - [Mechanical Safety and Licensing Board | NH Office of Professional Licensure and Certification](#)
- Must pass a test before Apprenticeship states.
- Can pursue with a Trade School and under the Supervision of a Journeyman or Master Plumber or you can work with Union who will help with the Classroom Hours and OJT



- **Youth Apprenticeship**

- [Earn As You Learn, Hire Skilled Workers | ApprenticeshipNH](#)
- You can start your Apprenticeship in High School
- It will mostly be completed during School Breaks, after school, and during the school day
 - This schedule will be worked out to meet the needs of both the Student and the Sponsor
- In 12th grade you would interview to Transition into a Registered Apprenticeship
- This path allows you to get started on your career with little to no student loan debt

Union Apprenticeship

There are Pro's and Con's to joining an Union Apprenticeship

Union Apprenticeship Pros	Union Apprenticeship Cons
<ul style="list-style-type: none"> ▪ Salary and Benefits ▪ Will earn more through the apprenticeship and as a Journeyman ▪ Job Security <ul style="list-style-type: none"> • If you are let go from a job the employer will need to provide documentation and a just reason as to why ▪ Safety <ul style="list-style-type: none"> • Union Journeyman and Apprentices adhere to strict and defined 	<ul style="list-style-type: none"> Slow Application Process <ul style="list-style-type: none"> • They can be very involved applications • Often involve interviews, tests and can include paper applications • They accept applications only during certain times of the month/year ○ Highly Competitive Applications <ul style="list-style-type: none"> ▪ Often requiring multiple applications over months and possibly years



<p>safety procedures</p> <ul style="list-style-type: none">▪ Career Growth<ul style="list-style-type: none">• Union Apprentices tend to have a quicker growth once they have gained their Journeyman's License	<ul style="list-style-type: none">○ Long Time Before Payoff<ul style="list-style-type: none">▪ Takes 4-5 years to become a Journeyman○ Can be limiting if your ambitious<ul style="list-style-type: none">▪ If you are skilled or have ambitions to rise up quickly and learn the basics of running the business
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- New Hampshire Plumbers and Pipefitters Local UA 131
 - They have an Apprenticeship Program and Advanced Journeyman Program (JATC)
 - The Training Facility is in Hooksett, NH
 - This is an Accredited Program
 - Successfully completion allows for college credit
 - Apprenticeship Program is 5 years long
 - Program starts in September
 - It is going to include both Classroom and On the Job Training (OJT)
 - Minimum of 235 hours of Classroom Training
 - Classes are held at their training facility at night
 - You are going to work the same hours as licensed plumbers and will be taking classes at night
 - Will receive a strong general education background in the trade
 - Core Classes in
 - Safety
 - Math
 - Science
 - Drawing
 - Minimum of 2000 hours of OJT
 - During the day you will be hired by contractors and work with highly skilled Journeyman
 - Pay increases
 - Start after your 2nd 6 months of Apprenticeship
 - Will be yearly after that



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- Basic Benefits will start after 6 months
 - Paid for by the Employer
 - Health and Welfare Insurance
 - Local 131 Pension Fund
 - Local 131 Annuity Plan
 - Fund for Retirement
 - Education Fund
- You have to agree to join the Union and the Training will be at no cost to you
 - You will have monthly dues and need to complete the full 5 years
 - You will have to sign a contract with them that states if you don't finish you will have to pay the Union back
- Pathways
 - At a point students will have to decide which of three paths they will take
 - Journeyman Plumber
 - Pipefitter
 - Service Mechanic
- Application Season is January to April
 - Applications are reviewed by a committee
 - Interviews are typically in May
 - Application Packets
 - Valid Driver's License
 - Birth Certificate (must be 18 years old)
 - Social Security Card
 - High School Diploma or Equivalent
 - High School Transcripts or Equivalency Test Grades
 - Military Discharge papers form DD-214, if applicable
 - Resume
 - Trade School Certificates relating to plumbing/pipefitting trade, if applicable
 - Letters of Recommendation
 - CTE Certificates
 - Completed Application
- If Accepted to Program
 - Serve a probationary Period of 1-year
 - Serve a 5-year apprenticeship



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- Including Probationary Period
- Report for work on a regular basis
- Work under the direction of a Journeyman on the job site
 - Perform job duties satisfactorily
- Attend training classes
 - Maintain acceptable average
- Provide your own transportation to and from the job site and training center
- Purchase Text Material as required
- Abide by all rules and regulations of the JATC



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