

PLUMBING TECHNICIAN

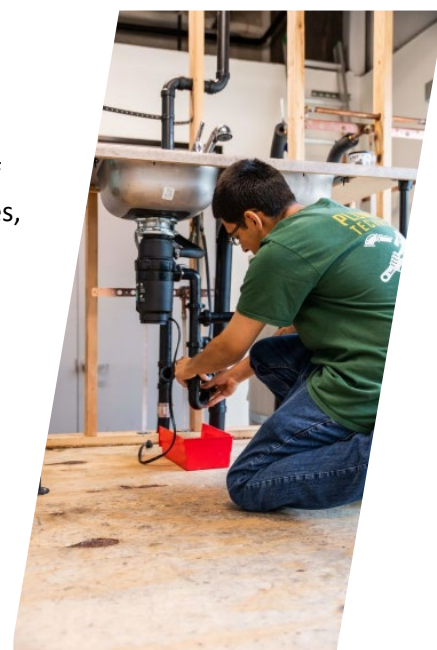
DESCRIPTION

The Plumbing Technician Program offers variety of courses to serve various career pathways within the plumbing service field. Students will learn the fundamentals of plumbing, mathematics in plumbing, devices, valves, fittings, fixtures, water supplies, safety, design and installation. Student will be prepared for entry level work in the plumbing field any of the following residential, commercial and industrial. This program is aligned with the National Center for Career Education and Research (NCCER) and students may qualify for optional third-party OSHA-10 safety training/certification.

CLASSIFICATION OF INSTRUCTION (CIP) CIP# CODE: 46.0503

Plumbing Technology/Plumber

ADMINISTRATIVE STANDARD OCCUPATIONAL CLASSIFICATION (SOC): 47-2152.02 PLUMBERS, PIPEFITTERS, AND STEAMFITTERS



• Total Instructional Hours 640 • Total Quarter Credit Hours 54 • Weeks of Classes 32 • Method of Delivery: Residential		THEORY HOURS		LABORATORY HOURS		MINIMUM WORK OUTSIDE OF CLASSROOM	TOTAL INSTRUCTIONAL HOURS & CREDITS	
Module Number & Title		Clock	Credit	Clock	Credit	Hours	Clock	Credit
Prerequisite Modules								
PL110	Plumbing Fundamentals	60	6	20	1	14	80	7
PL120	Plumbing Theory	80	8	0	0	16	80	8
PL130	Fittings & Fixtures	40	4	40	2	12	80	6
PL140	Drainage, Waste & Vents	40	4	40	2	12	80	6
PL150	Water Service & Distribution	40	4	40	2	12	80	6
PL160	Valves, Pumps & Plumbing Code	60	6	20	1	14	80	7
PL170	Layout & Installation	60	6	20	1	14	80	7
PL180	Servicing Plumbing Systems	60	6	20	1	14	80	7
Totals		440	44	200	10	108	640	54

Teacher/Student Ratio: 1:30 Class / 1:20 Lab

On Ground Lecture (Didactic) and Lab Skills

DEFINITION OF CLOCK HOUR TO CREDIT HOUR CONVERSION

One Quarter Credit Hour = 10 classroom /lecture hours; or 20 lab/shop hours; or 30 extern hours

*Homework Hours – are estimated and not included in total Clock Hours or Quarter Credit Hours

In the application of this section, for the purpose of official records of the amount of Credit hours Summit College shall round education credit hours down to the nearest half hour of credits actually completed i.e. .50 or .00 –Financial Aid Title IV Clock Hour to Credit hour Conversion may be different please see financial aid for conversions based on Quarter credits.

DESCRIPTION OF INSTRUCTION:

§94909(a)(5)

The Plumbing course are taught by lecture, lab. Lecture hours include faculty instruction, classroom activities, assessments, etc. The lab hours are comprised of hours specific to gaining industry related skills included, but not limited to, exercises and activities that strengthen and broaden a student's understanding of the job duties required of them in their chosen field. Homework assignments are given for outside the classroom preparation and reading.

***REQUIREMENTS FOR COMPLETION:**

Students must complete courses through demonstrating a satisfactory knowledge of the learning objectives for each course. This is tracked through the student's cumulative GPA and is also monitored through their attendance. Students are required to have 80% overall program attendance. All courses within this program must be complete in order for the student to be eligible for a certificate of completion.

INSTRUCTIONAL MATERIAL/EQUIPMENT

The plumbing program offers equipment that assists the students to learn various and important processes such as Blue Print Readings, Drafting, Pipe Threading, Plumbing water sources, Sewer installation, Water line repairs, Residential/commercial trouble shooting and diagnosing.

UNIFORM/EQUIPMENT/CONSUMABLES

2 – Plumbing Shirts, safety goggles, & Classroom consumables as needed.

BOOK TITLES / DIGITAL COURSEWARE**ISBN Number**

Plumbing 101	978-1-133-28153-5
Plumbing 201	978-1-337-40402-0
Residential Construction Academy: Plumbing	978-1-111-30777-6
Introductory Technical Mathematics	978-1-337-39767-4
Plumbing 301	978-1-337-39176-4
Plumbing 401	978-1-337-39189-4
Basic Blueprint Reading and Sketching	978-1-435-48378-1

GRADING SCALE & BREAKDOWN

Grade	Range	Points	Grade	Range	Points
A	96-100	4.0	C+	76-79	2.3
A-	90-95	3.7	C	70-75	2.0
B+	87-89	3.3	C-	67-69	1.7
B	83-86	3.0	D+	63-66	1.3
B-	80-82	2.7	D	60-62	1.0
			F	0-59	0

Test	30%
Quiz	15%
Homework	15%
Laboratory	40%

MODULE DESCRIPTION**Title: Plumbing Fundamentals**

Course Number: PL110
 Credit/Clock Hours: 7 -- 60 Lecture / 20 Lab
 Homework Hours: 14
 Course Length: 80 Hours / 4 Weeks
 Prerequisite: None

This course introduces students to the fundamentals of personal protection and various safety equipment types, plumbing basics such as tools and materials including hand and power tools, and basic OSHA regulations. Upon successful completion of the course, students will identify and describe the power and hand tools a plumber uses, identify the difference between drill bits and saw blades

relevant to a system installation or work location, and recognize safe material handling techniques. Topics include terms and definitions associated with plumbing, plumbing products and substances, ladders and scaffolding, trenches and confined spaces, and electrical safety.

Title: Plumbing Theory

Course Number: PL120
 Credit/Clock Hours: 8 -- 80 Lecture / 0 Lab
 Homework Hours: 16
 Course Length: 80 Hours / 4 Weeks
 Prerequisite: None

This course introduces students to the fundamentals of mathematical formulas and blueprint reading. Upon successful completion of the course, the student will have the skills and knowledge required to identify basic blueprint symbols, recognize the various views of piping systems, read isometric sketches, convert decimals and fractions, perform basic metric conversions, and understand cylindrical capacity formulas. Topics include reading orthographic and isometric drawings, horizontal lines and riser diagrams, templates and drafting tools, systems of measurement, and measuring and calculating for volume capacity.

Title: Fittings & Fixtures

Course Number: PL130
 Credit/Clock Hours: 6 -- 40 Lecture / 40 Lab
 Homework Hours: 12
 Course Length: 80 Hours / 4 Weeks
 Prerequisite: None

This course provides students with the skills and knowledge necessary to successfully identify common types of fitting designs and fixture types, appliance connections, and fixture and equipment installation. Upon successful completion of the course, students will correctly order fittings based on their installation's requirements, size, and materials, understand that different fixtures are installed during different phases of construction, and explain the differences in water heater designs and the basic principles of heating water. Topics include residential installation of common household fixtures, faucets, drain assemblies, gas, electric, and tankless water heaters, and the procedures associated with copper, marble and stainless-steel installation.

Title: Drainage, Waste & Vents

Course Number: PL140
 Credit/Clock Hours: 6 -- 40 Lecture / 40 Lab
 Homework Hours: 12
 Course Length: 80 Hours / 4 Weeks
 Prerequisite: None

This course prepares students with the skills and knowledge necessary to identify and describe all segments related to major and minor Drainage, Waste,

and Vent (DWV) systems, layout and installation of DWV systems, and the proper codes associated with DWV systems. Upon successful course completion, students will understand how a basic conventional septic system operates, recall the basic abbreviations concerning a DWV system, size the various segments of a DWV system, know basic layout considerations based on common fixture types and codes, and recognize pipe route installations based on structural obstacles. Topics include building sewer and drain systems, vent stack and waste stack connection, special venting arrangements, trap distance and septic systems, pipe protection, and identifying the layout for major fixture group installation.

Title: Water Service & Distribution Installation

Course Number: PL150
 Credit/Clock Hours: 6 -- 40 Lecture / 40 Lab
 Homework Hours: 12
 Course Length: 80 Hours / 4 Weeks
 Prerequisite: PL110, PL120, PL130, PL140

This course is designed to introduce students to the importance of safe drinking water and the specific systems and fittings used within these systems, learn the correct techniques for installing a water distribution system, and provide students with the skills and knowledge necessary to successfully identify common types of fitting designs and fixture types. Upon successful completion of the course, students will correctly order fittings based on their installations requirements, size, and materials, learn the correct techniques for installing a water distribution system, respect that a plumber installs water piping per code and protects water quality, and understand drilling and notching codes to ensure the structural safety of a building. Topics include public and private water installation, various types of fittings and materials such as copper, brass, galvanized, and polyethylene, and compounds and sealants that include but are not limited to soldering, brazing and solvent-welding.

Title: Valves, Pumps & Plumbing Code

Course Number: PL160
 Credit/Clock Hours: 7 -- 60 Lecture / 20 Lab
 Homework Hours: 14
 Course Length: 80 Hours / 4 Weeks
 Prerequisite: PL110, PL120, PL130, PL140

This course introduces students to the importance of various types of valves and devices associated with piping systems and their unique characteristics. Upon successful completion of the course, students will relate installation of valves and devices to plumbing codes, identify and describe valves and devices associated with plumbing installation, and understand that certain valve designs can only be used for specific systems. Topics include isolation valves, pumps, hose outlets, reactionary

valves, and the importance of manufacturer's requirements.

Title: Layout & Installation

Course Number: PL170
 Credit/Clock Hours: 7 -- 60 Lecture / 20 Lab
 Homework Hours: 14
 Course Length: 80 Hours / 4 Weeks
 Prerequisite: PL110, PL120, PL130, PL140

This course is designed to introduce students to blueprint reading, drafting, material organization and layout procedures associated with plumbing. Upon successful course completion, students will have the skills and knowledge to interpret basic residential architectural prints, create simple sketches and understand the different illustrated views of a piping system, identify basic plumbing symbols and abbreviations, demonstrate proper system layout and safe material handling techniques, and be familiar with the differences between projects for layout and installation of a plumbing system. Topics include plumbing and architectural symbols, drafting tools such as scale rulers, drafting triangles and papers, symbol templates, riser diagrams, palletizing, bagging and tagging, and underground and above-ground layout.

Title: Servicing Plumbing Systems

Course Number: PL180
 Credit/Clock Hours: 7 -- 60 Lecture / 20 Lab /14
 Homework Hours: 14
 Course Length: 80 Hours / 4 Weeks
 Prerequisite: PL110, PL120, PL130, PL140

This course prepares students for servicing plumbing repairs and troubleshooting, the theory of hydronic heating systems, roof drain systems and drain cleaning. Upon successful completion of the course, students will understand basic water heater, well pump, and toilet repair approaches, recognize that a troubleshooting approach is based on a specific product or system, identify manufacturer's specific product and repair and replacement information, define a heat source and correctly identify the segments of a roof drain system and the basic steps of clearing sewer and stoppage drains. Topics include safety, electric and gas water heaters, upper and lower thermostats, well pumps and toilets, boiler and hydronic heat efficiency, hydronic system piping, installing and starting the hydronic system, storm drain systems, roof designs and cleanouts.