APPRENTICESHIP: PIPE TRADES (APPT)

APPT 121 • INTRODUCTION TO RESIDENTIAL PLUMBING, SAFETY & TOOLS

Units:	2.5
Hours:	18 lecture, 36 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Residential Plumbing Apprenticeship Program.
Advisory:	Current employment in the pipe trades industry.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

An introduction to basic residential plumbing standards, employment information and procedures, history and heritage of plumbing, organization and construction safety. Necessary trade skills including cutting and threading, use and care of tools, and soldering and brazing are taught along with construction terminology and plumbing definitions.

APPT 122 • RESIDENTIAL SYSTEMS, WASTE, WATER & GAS SIZING

Units:	2.5
Hours:	18 lecture, 36 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Residential Plumbing Apprenticeship Program.
Advisory:	Current employment in the pipe trades industry.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Overview of the installation and design criteria of residential drainage, waste, and vent systems, with emphasis and study of the applied theory, design, and installation criteria. Includes application of local codes.

APPT 123 • RESIDENTIAL GAS & WATER INSTALLATIONS

Units:	2.5
Hours:	18 lecture, 36 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Residential Plumbing Apprenticeship Program.
Advisory:	Current employment in the pipe trades industry.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Overview of the installation and design criteria of residential hot and cold water, and fuel gas installations. Includes piping materials and hanger systems, material handling, and environmental concerns.

APPT 124 • MATHEMATICS FOR RESIDENTIAL PLUMBING

Units:	2.5
Hours:	18 lecture, 36 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Residential Plumbing Apprenticeship Program.
Advisory:	Current employment in the pipe trades industry; not open to students with credit in APRT 195.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

A review of basic math concepts and operation, followed by instruction in pipe measurements, formulas, and off-set calculations. Use of common electronic calculators will be included.

APPT 125 • RESIDENTIAL BLUEPRINT READING & DRAWING

Units:	4.5
Hours:	30 lecture, 78 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Residential Plumbing Apprenticeship Program.
Advisory:	Current employment in the pipe trades industry.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

This course familiarizes students with the various blueprints, drawings, and sketches used in residential construction. Plan types, details, and symbols will be covered, as well as common construction terms and methods. Working from a set of building plans, students will create isometric drawings of plumbing systems.

APPT 126 • RESIDENTIAL PIPING LAYOUT & INSTALLATION; RESIDENTIAL FIXTURES

Units:	4.5
Hours:	30 lecture, 78 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Residential Plumbing Apprenticeship Program.
Advisory:	Current employment in the pipe trades industry.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Introduction to the various methods of inserting and sleeving in residential construction. Students practice the layout and installation of residential copper pipe and tube systems. Provides hands-on practice of plumbing fixture installation, service, and repair.

APPT 127 • RESIDENTIAL PLUMBING CODE

Units:	2.5
Hours:	18 lecture, 36 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Residential Plumbing Apprenticeship Program.
Advisory:	Current employment in the pipe trades industry.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

A comprehensive overview of the Plumbing Code. Students examine each chapter of the code book and practice proper application through worksheets, system design, and sizing exercises.

APPT 128 • RESIDENTIAL GAS INSTALLATIONS; SERVICE WORK & BACKFLOW

Units:	2.5
Hours:	18 lecture, 36 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Residential Plumbing Apprenticeship Program.
Advisory:	Current employment in the pipe trades industry; not open to students with credit in APRT 183.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Introduction to safe practices for working in excavations and confined spaces. Provides instructions and hands-on practice in underground polyethylene gas installations and residential service work.

APPT 129 • SPECIAL TOPICS

Units:	3.5
Hours:	36 lecture, 18 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing/ Steamfitting & Pipefitting/Air Conditioning & Refrigeration Technology Apprenticeship Programs.
Advisory:	Not open to students with credit in APPR 109.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Study of special topics: students study pipe trade-related software and computer assisted drawing. Students develop advanced welding skills. Course introduces concepts of digital controls. Course prepares students to certify in repair of back flow control devices. Students further examine management techniques for planning and organizing projects.

APPT 130 • REVIEW & TURNOUT

Units:	3.5
Hours:	36 lecture, 18 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing/ Steamfitting & Pipefitting/Air Conditioning & Refrigeration Technology Apprenticeship Programs.
Advisory:	Not open to students with credit in APPR 130.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

A comprehensive overview of the entire plumbing, steamfitting, and refrigeration courses of instruction and preparation for completion examinations. Presentation of the latest current code and safety information. Planning and performing hands-on piping projects. Students perform hands-on troubleshooting projects for air conditioning systems.

APPT 131 • P-101 BASIC PLUMBING SKILLS

Units:	7.5
Hours:	82 lecture, 36 laboratory per quarter (118 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 110.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Orientation to the apprenticeship program, JATC policies and procedures. UA history and heritage will also be covered. Safety training is introduced, with instruction in general construction safety. This is followed up with necessary trade skills, including use and care of tools, pipe and tube installations, and soldering and brazing.

APPT 132 • P-102 APPLIED & RELATED THEORY

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 102.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Review of basic math before introducing new concepts, including pipe measuring and calculation of simple offsets. Students learn fundamental scientific principles related to the installation and design of basic plumbing systems. Installation and design of fuel gas piping and drainage systems are also studied.

APPT 133 • P-201 BEGINNING DRAWING & DESIGN

Units:	5
Hours:	36 lecture, 72 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 112.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Drawing fundamentals to instruction in isometric drawing. Students learn the proper design and sizing of simple waste, water, and gas systems. In-depth study of water supply systems is also included. Students also learn to read and interpret simple residential building plans, designing and coordinating plumbing systems within the structure.

APPT 134A • P-202A RIGGING; LAYOUT

Units:	2.5
Hours:	18 lecture, 36 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 113.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Instruction in identification and tying various types of knots; study in hands-on safe practices of rigging and hoisting piping materials. Instruction in the use of a transit, builder's level, laser level, and other measuring instruments in the layout and installation of piping systems. Establish the invert elevations and coordination of piping systems by means of profile drawings.

APPT 134B • INDUSTRIAL SAFETY

Units:	4.5
Hours:	54 lecture per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing/ Steamfitting & Pipefitting Technology Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Study of the requirements for emergency response to and handling of hazardous materials. Covers laws of chemical hazards, electrical hazards, personal protective equipment, confined spaces, monitoring equipment, and federal and Cal-OSHA standards for the construction industry.

APPT 135A • P-301A PLUMBING FIXTURES

Units:	2.5
Hours:	18 lecture, 36 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 116.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Instruction in plumbing fixtures and appliances. Names and design features of various plumbing fixtures are discussed. Study of proper installation, maintenance, and repair of fixtures and appliances.

APPT 135B • P-301B PLUMBING CODES

Units: 4.5
Hours: 54 lecture per quarter (54 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Plumbing Technology Apprenticeship Program.
Advisory: Not open to students with credit in APPR 119.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Students learn and demonstrate the procedures for coordinating the testing and inspection of plumbing systems and applicable codes that a plumbing systems test must meet. Knowledge of general regulations, including accessibility and ADA requirements, is also discussed.

APPT 136 • P-302 ADVANCED TRADE MATH FOR PLUMBERS

Units: 7
Hours: 72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Plumbing Technology Apprenticeship Program.
Advisory: Not open to students with credit in APPR 118.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Extensive use of piping formulas to solve typical piping layout calculations. Students calculate compound offsets and accurately determine center to center and end to end piping measurements for plumbing systems.

APPT 137A • P-401A WATER SYSTEMS

Units: 4.5
Hours: 54 lecture per quarter (54 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Plumbing Technology Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Development and operation of domestic and industrial water supply and distribution systems for installation and operation. An overview of water sources, methods used to plan and configure supply, purification, and distribution systems, for operation and maintenance.

APPT 137B • P-401B APPLIED WELDING

Units: 1.5
Hours: 54 laboratory per quarter (54 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Plumbing Technology Apprenticeship Program.
Advisory: Not open to students with credit in APPR 117.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Instruction and practice in oxy-fuel cutting, oxy-fuel welding, and arc welding of steel plate and pipe. Safety and accuracy in measuring, lay-out, and torch handling is emphasized.

APPT 138 • P-402 ADVANCED DRAWING & BLUEPRINT READING

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 114.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Interpretation of orthographic and isometric drawings and building plans that make up working drawings for the proper installation of piping systems. Covers standard graphic symbols used to represent piping, fittings, and valves on construction drawings, as well as various construction methods and materials, specifications, and submittals. Hands-on exercises in the creation and coordination of shop drawings.

APPT 139A • PROCESS PIPING

Units:	3.5
Hours:	36 lecture, 18 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing/ Steamfitting & Pipefitting Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPT 139.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Process piping and high purity water piping systems (HPW), including covering hazards associated with these installations. Presents water treatment and clean steam parameters for the pharmaceutical and biotech manufacturing industries. Covers pneumatic control systems, including the identification and installation of regulators and valves, pneumatic tubing, and use of air compressors and refrigerated air-dryers. Includes discussion of control systems. Hands-on experience with tube bending.

APPT 139B • MEDICAL GAS INSTALLATIONS

Units:	3.5
Hours:	36 lecture, 18 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing/ Steamfitting & Pipefitting Technology Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Installation procedures of medical gas and vacuum systems. Apprentices learn about station outlets/inlets, manufactured assemblies, and pressure/vacuum indicators. Brazing requirements are described and proper techniques are demonstrated. Practice of brazing techniques in order to prepare for the brazing qualification exam.

APPT 141 • SF 101 BASIC STEAMFITTING SKILLS

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Steamfitting & Pipefitting Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 123.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Orientation to the apprenticeship program, JATC policies and procedures. UA history and heritage also covered. Safety training is introduced, with instruction in general construction safety. This is followed up with necessary trade skills, including use and care of tools, pipe and tube installations, and soldering and brazing.

APPT 142 • SF 102 RELATED MATH, DRAWING & RIGGING

Units:	3.5
Hours:	36 lecture, 18 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Steamfitting & Pipefitting Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 124.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Review of basic math before introducing new concepts, including pipe measuring and calculation of simple offsets. Students then learn drawing fundamentals before moving to instruction in isometric drawing. Instruction in identification and tying various types of knots, study of hands-on safe practices of rigging and hoisting piping materials. Students also learn basic computer skills.

APPT 143 • SF 201 STEAMFITTER CUTTING & WELDING

Units:	5
Hours:	36 lecture, 72 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Steamfitting & Pipefitting Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 122.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Instruction and practice in oxy-fuel cutting, oxy-fuel welding, and arc welding of steel plate and pipe. Safety and accuracy in measuring, lay-out, and torch handling is emphasized.

APPT 143A • BEGINNING CUTTING, FIT-UP & WELDING

Units:	2
Hours:	12 lecture, 42 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Steamfitting & Pipefitting Technology Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Pass/No Pass Only
Repeatability:	Not Repeatable

Basic concepts and skills of cutting, tacking, and welding. Instruction on the breakdown and setup of oxy-fuel rigs; making different kinds of cuts and bevels on steel plate and pipe. Instruction on take-offs and fitting up butt welded fittings on a spool. Beginning welding concepts will also be discussed. Instruction on basic positions of welding on plate.

APPT 144A • SF 202A SCIENCE; ELECTRICITY & AIR CONDITIONING

Units:	3
Hours:	36 lecture, 12 laboratory per quarter (48 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Steamfitting & Pipefitting Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 126.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Foundation for subsequent courses through instruction in the fundamentals of science, electrical theory and circuitry, and the principles of refrigeration and air conditioning.

APPT 145 • SF 301 ADVANCED TRADE MATH FOR STEAMFITTERS

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Steamfitting & Pipefitting Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 121.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Extensive use of piping formulas to solve typical piping layout calculations. Students calculate compound offsets and accurately determine center to center and end to end piping measurements.

APPT 146 • SF 302 STEAM TECHNOLOGY

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Steamfitting & Pipefitting Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 127.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Basic properties and concepts of steam. Instruction on steam traps, installation techniques, and general operation. One-pipe systems are compared to two-pipe systems. Importance of steam piping, proper pipe sizing, expansion joints, and connections. Heat transfer devices and steam boilers are also discussed, with focus on types and proper installation and connection methods.

APPT 147A • SF 401A HYDRONIC SYSTEMS

Units:	3.5
Hours:	36 lecture, 18 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Steamfitting & Pipefitting Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 125.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Basic principles of various hydronic systems, including equipment selection, pipe sizing, piping connections, and proper installation methods. Start, test, and balance procedures.

APPT 147B • SF 401B INDUSTRIAL RIGGING

Units:	3.5
Hours:	36 lecture, 18 laboratory per quarter (54 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Steamfitting & Pipefitting Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APRT 180.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Appropriate knots required for specific rigging operations. Rigging safety protocol is reviewed, which includes health and safety legislation and the responsibilities of specified rigging personnel. Crane signals and practice of rigging skills, through both observation and hands-on activities.

APPT 148 • SF 402 ADVANCED DRAWING & BLUEPRINT READING

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Steamfitting & Pipefitting Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 120.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Study of technical drawings, piping drawings, building plans, specifications, and submittals. Interpretation of three view, plan view, elevation view, and isometric drawings is discussed. Hands-on exercises in the process of creating coordinated drawings, beginning with sketching principles, calculating and drawing, and finishing with drawing coordination and system design.

APPT 151 • RF 101 BASIC REFRIGERATION SERVICE SKILLS

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Air Conditioning & Refrigeration Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 131.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Orientation to the apprenticeship program, JATC policies and procedures. UA history and heritage is also covered. Safety training is introduced, with instruction in general construction safety and hazardous materials awareness. Necessary trade skills, including pipe and tube installations and soldering and brazing.

APPT 152 • RF 102 BASIC ELECTRICITY & REFRIGERATION

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Air Conditioning & Refrigeration Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 132.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

A review of laws pertaining to basic electrical theory and their application to mechanical equipment service. Also covers refrigeration theory and application of the vapor compression cycle.

APPT 153 • RF 201 MECHANICAL SYSTEM FUNDAMENTALS

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Air Conditioning & Refrigeration Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 133C.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Basic and advanced refrigeration concepts. Extensive study of the design, assembly, and operation of compression systems. Includes liquid and vapor control, metering devices, system components, and piping design.

APPT 154 • RF 202 ELECTRIC SYSTEM FUNDAMENTALS

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Air Conditioning & Refrigeration Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 134.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Fundamentals of electrical controls related to HVAC and refrigeration equipment. Students assemble and wire actual electrical components and controls.

APPT 155 • RF 301 ADVANCED ELECTRIC SYSTEMS

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Air Conditioning & Refrigeration Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 140.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Advanced principles of electric controls used for mechanical equipment in the HVAC industry. Students study control diagrams and further develop skills and service procedures used to troubleshoot electrical problems in HVACR equipment.

APPT 156 • RF 302 HVACR CONTROL SYSTEMS

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Air Conditioning & Refrigeration Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 135.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Introduction to HVAC fundamentals, energy sources, and control system principals. Focus on pneumatic, electrical, electronic, and building automation control systems and components.

APPT 157 • RF 401 ADVANCED MECHANICAL SYSTEMS

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Air Conditioning & Refrigeration Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 107.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Servicing industrial refrigeration and air conditioning systems. Covers alignment and repair of circulating pumps and compressors, as well as industrial valve applications and repair. Rigging procedures, refrigerant handling, and basic office computer skills also covered in computer lab.

APPT 158 • RF 402 ADVANCED REFRIGERATION & CHILLERS

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Air Conditioning & Refrigeration Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 108.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Study of the operation and design of positive displacement water chillers and commercial chiller room equipment. Single-stage and multi-stage centrifugal water chillers are covered. Methods of evaluating chiller performance; students develop troubleshooting skills.

APPT 159 • RF 501 START, TEST & BALANCE; HVAC SYSTEMS

Units:	7
Hours:	72 lecture, 36 laboratory per quarter (108 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Air Conditioning & Refrigeration Technology Apprenticeship Program.
Advisory:	Not open to students with credit in APPR 149A.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Use of balancing instruments and devices for HVACR systems. Covers theory and operation of mechanical systems, equipment, and testing instruments. This course stresses the necessity of comprehending the design and intent of the mechanical project, the proper use of testing apparatus, and the production of professional reports.

APPT 161 • SAFETY/OSHA/TOOLS/ HERITAGE/SERVICE

Units:	4.5
Hours:	36 lecture, 63 laboratory per quarter (99 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

First-year course of the Plumbing and Pipefitting Apprenticeship program. Provides students with a working knowledge of plumbing industry materials and standards. Learn use and care of pipe trade tools, practice safety and heritage of the United Association. Also provides OSHA 30 certification.

APPT 162 • MATHEMATICS/SCIENCE FOR THE PLUMBING TRADE

Units:	4.5
Hours:	36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

First year of the Plumbing and Pipefitting Apprenticeship program. This course provides students with a working knowledge of mathematics and science as it applies to the plumbing industry.

APPT 163 • CODE/WATER SUPPLY SYSTEMS

Units:	4.5
Hours:	36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

First year of the Plumbing and Pipefitting Apprenticeship program. This course provides students with a working knowledge of Plumbing Code I and water supply systems.

APPT 164 • DRAWING I FOR THE PLUMBING TRADE

Units:	4.5
Hours:	36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Third-year course of the Plumbing and Pipefitting Apprenticeship program. This course provides students with a working knowledge of plumbing and piping layouts, drainage systems, piping and fixture supports as it applies to mechanical drawings.

APPT 165 • DRAWING II FOR THE PLUMBING TRADE

Units:	4.5
Hours:	36 lecture, 63 laboratory per quarter (99 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Second-year course of the Plumbing and Pipefitting Apprenticeship program. This course provides students with a working knowledge of technical drawings, isometric drawings and the creation of building plans as it applies to the plumbing trade.

APPT 166 • WELDING/OXY-ACETYLENE TRAINING

Units:	4.5
Hours:	36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Third-year course of the Plumbing and Pipefitting Apprenticeship program. This course provides students with a working knowledge of welding principles, as it relates to metal ARC welding, gas ARC welding, TIG welding, MIG welding and oxygen/acetylene burning and welding.

APPT 167 • STEAM SYSTEMS/RIGGING/ PIPE FITTING & SERVICE

Units:	4.5
Hours:	36 lecture, 63 laboratory per quarter (99 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Fourth year of the Plumbing and Pipefitting Apprenticeship program. This course provides students with a working knowledge of layout, cut, and fit for water piping and steamfitting systems.

APPT 168 • MEDICAL GAS/HYDRONICS/ SIGNAL PERSON

Units:	4.5
Hours:	36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Fourth-year course of the Plumbing and Pipefitting Apprenticeship program. This course provides students with a working knowledge of medical gas, brazer, crane signaling, and hydronic systems.

APPT 169 • ADVANCED DRAWING/ LAYOUT FOR THE PLUMBING TRADES/UA FOREMAN TRAINING

Units:	4.5
Hours:	36 lecture, 63 laboratory per quarter (99 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Fifth-year course of the Plumbing and Pipefitting Apprenticeship program. This course provides students with a working knowledge of advanced drawing, plumbing layout and building detailing. Practical field knowledge of plumbing duties, processes, objectives and code callouts is covered in-depth.

APPT 170 • CODE II/JUNIOR MECHANICS REVIEW & EXAM

Units:	4.5
Hours:	36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Fifth-year course of the Plumbing and Pipefitting Apprenticeship program. This course provides students with a working knowledge of Plumbing Codes and review of how changes affect the Plumbing Codes.

APPT 171 • BASIC REFRIGERATION/ HERITAGE/CFC/OSHA 10

Units:	4.5
Hours:	36 lecture, 63 laboratory per quarter (99 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Refrigeration & Air Conditioning Mechanical Service Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

First-year course of the Refrigeration and Air Conditioning Apprenticeship program. This course provides students with a working knowledge of thermodynamics, chlorofluorocarbons (CFC), and basic refrigeration, as it pertains to the air conditioning service industry. Also provides OSHA 10 certification.

APPT 172 • REFRIGERATION SCIENCE

Units:	4.5
Hours:	36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Refrigeration & Air Conditioning Mechanical Service Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

First-year course of the Refrigeration and Air Conditioning Apprenticeship program. This course provides students with a working knowledge of basic refrigeration, refrigeration equipment, and equipment maintenance.

APPT 173 • BASIC ELECTRICITY FOR THE HVAC SERVICE TRADE

Units:	4.5
Hours:	36 lecture, 63 laboratory per quarter (99 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Refrigeration & Air Conditioning Mechanical Service Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Provides students with a working knowledge of basic electricity, including AC/DC theory and Ohm's Law. Students will be expected to apply these theories in the laboratory using electronic and testing instruments.

APPT 174 • ADVANCED ELECTRICITY/ PNEUMATIC DDC INTRODUCTION

Units:	4.5
Hours:	36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Refrigeration & Air Conditioning Mechanical Service Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Second-year course of the Refrigeration and Air Conditioning Apprenticeship program. This course provides students with a working knowledge of advanced electricity, motors, starter, circuitry, and variable drives.

APPT 175 • CONTROLS I/ELECTRO PNEUMATICS

Units: 4.5
Hours: 36 lecture, 63 laboratory per quarter (99 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Refrigeration & Air Conditioning Mechanical Service Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade Only
Repeatability: Not Repeatable

Third-year course of the Refrigeration and Air Conditioning Apprenticeship program. This course provides students with a working knowledge of controls, control theory, timing circuits, computerized control, and energy management systems.

APPT 176 • CONTROLS II/ADVANCED PNEUMATICS CALIBRATION/HYDRONICS

Units: 4.5
Hours: 36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Refrigeration & Air Conditioning Mechanical Service Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade Only
Repeatability: Not Repeatable

Third year of the Refrigeration and Air Conditioning Apprenticeship program. This course provides students with a working knowledge of advanced control systems, including the uses of 2-position, floating and modulating controls. Fiber optics and direct digital controls are introduced.

APPT 177 • START, TEST & BALANCE I

Units: 4.5
Hours: 36 lecture, 63 laboratory per quarter (99 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Refrigeration & Air Conditioning Mechanical Service Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade Only
Repeatability: Not Repeatable

This course provides students with an introduction to start, test and balance for fluid distribution. Ducting, cooling, fans, and air distribution is covered in the laboratory exercises.

APPT 178 • START, TEST & BALANCE II/ ENERGY AUDITING PRACTICES

Units: 4.5
Hours: 36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Refrigeration & Air Conditioning Mechanical Service Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade Only
Repeatability: Not Repeatable

Fourth-year course of the Refrigeration and Air Conditioning Apprenticeship program. This course provides students with a working knowledge of start, test and balance for piping systems, pumps, chillers, boilers, and condensers. Students will learn how to audit mechanical equipment to ensure proper energy efficiency techniques are applied.

APPT 179 • CHILLERS/SPECIAL SYSTEMS/HVACR STAR REVIEW

Units: 4.5
Hours: 36 lecture, 63 laboratory per quarter (99 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Refrigeration & Air Conditioning Mechanical Service Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade Only
Repeatability: Not Repeatable

Provides students with a working knowledge of pipe drafting and blueprint reading for heating, ventilation and air conditioning (HVAC) systems. Hands-on activities include applying airside, waterside and pressure testing systems.

APPT 180 • HVACR STAR REVIEW & EXIT EXAM

Units: 4.5
Hours: 36 lecture, 66 laboratory per quarter (102 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Refrigeration & Air Conditioning Mechanical Service Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade Only
Repeatability: Not Repeatable

Fifth-year course of the Refrigeration and Air Conditioning Apprenticeship program. This course provides students with a working knowledge of troubleshooting, test and repair of refrigeration and air conditioning systems.

APPT 185 • PIPE MATERIALS, SAFETY & TOOLS, SOLDERING & BRAZING

Units: 5
Hours: 37 lecture, 86 laboratory per quarter (123 total per quarter)
Prerequisite: Student is a registered State indentured apprentice.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

This course provides students with a working knowledge of soldering and brazing along with safe practices as it relates to on-the-job-training.

APPT 186 • MATHEMATICS/RIGGING & SIGNALING

Units: 5
Hours: 37 lecture, 86 laboratory per quarter (123 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

This course provides students with a working knowledge of mathematics, rigging and signaling as it applies to the Plumbing and Pipefitting industry. Students will apply safety practices as it relates to on-the-job training.

APPT 187 • DRAWING INTERPRETATION & PLAN READING/SCIENCE

Units: 5
Hours: 37 lecture, 86 laboratory per quarter (123 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Students will gain a working knowledge of drawing interpretation, plan reading and science as it applies to the plumbing industry. This course is required to meet the certificate requirements to become a journeyman plumber.

APPT 189 • WELDING/OXYGEN-ACETYLENE

Units:	4
Hours:	20 lecture, 103 laboratory per quarter (123 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Provides students with a working knowledge of welding principles as they relate to Shielded Metal Arc Welding (SMAW) and Gas Tungsten Arc Welding (GTAW). Students will gain knowledge in the principles of oxygen/acetylene cutting and welding.

APPT 190 • PIPE FITTING WITH A CALCULATOR

Units:	5
Hours:	37 lecture, 86 laboratory per quarter (123 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the plumbing & pipefitting apprenticeship program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

This course provides students with a working knowledge of mathematics and pipe fitting as it applies to the plumbing and pipe fitting industry. Students will apply safety practices as it relates to on-the-job training.

APPT 191 • PLUMBING CODE APPLICATION, PLUMBING FIXTURES

Units:	5
Hours:	37 lecture, 86 laboratory per quarter (123 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the plumbing & pipefitting apprenticeship program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

This course provides students with a working knowledge of the plumbing code application and plumbing fixtures as it applies to the plumbing and pipe fitting industry. Students will apply safety practices as it relates to on-the-job training. This course is required to meet the certificate requirements to become journeyman plumber.

APPT 192 • NATURAL GAS INSTALLATION, DRAINAGE

Units:	5
Hours:	37 lecture, 86 laboratory per quarter (123 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the plumbing & pipefitting apprenticeship program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

This course provides students with a working knowledge of natural gas installations and drainage as it applies to the plumbing and pipe fitting industry. This course is required to meet the certificate requirements to become journeyman plumber.

APPT 193 • WATER SUPPLY, PATTERNS

Units: 5
Hours: 37 lecture, 86 laboratory per quarter (123 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the plumbing & pipefitting apprenticeship program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

This course provides students with a working knowledge of water supply and patterns as it applies to the plumbing and pipe fitting industry. Students will apply safety practices as it relates to on-the-job training.

APPT 194 • MEDICAL GAS, REVIEW EXIT EXAM/FINAL EXAM

Units: 1.5
Hours: 5 lecture, 55 laboratory per quarter (60 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Apprentices learn the installation procedures of medical gas and vacuum systems. This includes medical gas alarms systems, valve stations, inlets, outlets and the complete vacuum system. Brazing techniques will be described and demonstrated.

APPT 195 • HYDRONICS/STEAM SYSTEMS/PUMPS

Units: 5
Hours: 37 lecture, 86 laboratory per quarter (123 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Basic concepts of various heating and cooling systems. Equipment selection, pipe sizing, proper installation methods are taught. One-pipe steam systems will be compared to two-pipe systems. Pump selection and application as well as service and repair.

APPT 196 • BASIC ELECTRICITY, ELECTRICAL CONTROLS FOR MECHANIC EQUIPMENT

Units: 5
Hours: 37 lecture, 86 laboratory per quarter (123 total per quarter)
Prerequisite: Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status: Degree-Applicable Credit Course
Foothill GE: Non-GE
Transferable: None
Grade Type: Letter Grade (Request for Pass/No Pass)
Repeatability: Not Repeatable

Students will be taught basic electrical principals relating to mechanical equipment. Ohm's Law, circuitry, variable frequency drives, as well as troubleshooting techniques will be covered. Students will be able to identify and classify motors and starters.

APPT 198 • PLUMBING SERVICE & REPAIR

Units:	5
Hours:	37 lecture, 86 laboratory per quarter (123 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Plumbing & Pipefitting Apprenticeship Program.
Degree and Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

This course provides students with a working knowledge of service and repair work. Students will learn basic identification and troubleshooting skills needed to complete repairs in a safe and timely manner.