

PA PHCC Contents Outline

Plumbing 101

Unit 1 – Plumbing Background, Skills Required of a Technician and Tool Information

- Chapter 1 Plumbing History, Laws and Safety (old ch. 1-2)
- Chapter 2 Tools of the Plumbing Trade (old ch. 3-7)

Unit 2 – First Aid and Safety

- Chapter 3 First Aid and Safety (old ch. 25-28)

Unit 3 – Basic Arithmetic Needed for Plumbing Work

- Chapter 4 Decimals, Fractions, Percentages and Measurement old ch. 8-11, 21)

Unit 4 – Related Science

- Chapter 5 Water Sources, Waste Disposal and Sewage Disposal (old ch. 12-13)
- Chapter 6 Introduction to Gases (old ch. 14)
- Chapter 7 Working with Wood, Steel and Concrete in Building Structures (old ch. 15-16)

Unit 5 – Installation Practices

- Chapter 8 Piping Materials Used in Plumbing Work (old ch. 17-18)
- Chapter 9 Joining Methods and Materials for Piping (old ch. 19-20)

Unit 6 – Mathematics

- Chapter 10 Squares, Square Roots and Basic Geometry (old ch. 22-24)

Unit 7 – Installation Practices

- Chapter 11 Plumbing Fixtures (old ch. 29)
- Chapter 12 Fixture Fittings (Faucets) (old ch. 30)
- Chapter 13 Valves (old ch. 31)

Unit 9 – Blueprint Reading and Sketching

- Chapter 14 Plans and Drawings/Scale Rulers/Projections (old ch. 32, 33, 36)
- Chapter 15 Sketching, Symbols and Detail Sketching (old ch. 34-35)

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Plumbing 201

Unit 1 – Installation Practices

- Chapter 1 Piping Materials, Sources and Distribution for Potable Water
- Chapter 2 Water Pipe Sizing – Main and Branch Systems
- Chapter 3 Pipe Sizing – Individual Run Systems
- Chapter 4 Cross Connection Protection and Pipe Identification
- Chapter 5 Codes and Hot Water
- Chapter 6 Water Heaters – Part I
- Chapter 7 Water Heaters – Part II

Unit 2 – Plumbing Mathematics

- Chapter 8 Mathematics and Linear Measure Review
- Chapter 9 Squares, Cubes, Square Roots and Cube Roots
- Chapter 10 Offsets
- Chapter 11 Shapes, Areas, Volumes and Lead and Oakum Calculations

Unit 3 – Installation Practices

- Chapter 12 Sewage Disposal Methods
- Chapter 13 Sewers
- Chapter 14 Drainage Fixture Units
- Chapter 15 Building Drains
- Chapter 16 Stacks

Unit 4 – Blueprint Reading

- Chapter 17 Rough-In Sheets
- Chapter 18 Single Line Drawings – Residential and Commercial
- Chapter 19 Single Line Drawings – Industrial and Institutional
- Chapter 20 Detail Drawings, Sections and Exploded View Drawings

Unit 5 – Welding

- Chapter 21 Introduction to Welding
- Chapter 22 Gas Welding Equipment and Safety
- Chapter 23 Soldering, Brazing, Cutting and Gas Welding
- Chapter 24 Shielded Metal-Arc Welding
- Chapter 25 Testing Welds and Other Welding Methods

Unit 6 – Plumbing Vents and Sewage Pumps

- Chapter 26 Venting Plumbing Drainage Systems
- Chapter 27 Vent Piping – Hangers and Vent Types
- Chapter 28 Sump Pumps, Sewage Pumps and Sewage Ejectors

Unit 7 – Related Science

- Chapter 29 Properties of Water

Chapter 30 Plumbing Traps
Chapter 31 Air

Unit 8 – Installation Practices

Chapter 32 Plastic Pipe and Fittings – Part I
Chapter 33 Plastic Pipe and Fittings – Part II

Unit 9 – Safety Practices

Chapter 34 Hoisting and Rigging
Chapter 35 Safety in Hoisting Operations
Chapter 36 Ladders and Scaffolds

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Plumbing 301

Unit 1 – Installation Practices

- Chapter 1 Pre-planning, Productivity and Profitability*
- Chapter 2 Residential Fixtures and Appliances
- Chapter 3 Commercial, Industrial and Institutional Fixtures and Appliances
- Chapter 4 Installation Methods
- Chapter 5 Fixture Fittings and Trim
- Chapter 6 Trim Installation

Unit 2 – Blueprint Reading

- Chapter 7 Blueprints and Specifications
- Chapter 8 Drawing Types, Floor Plans and Site Plans
- Chapter 9 Structural, Plumbing, Electrical, HVAC and Detail Plans

Unit 3 – National Fuel Gas Code

- Chapter 10 National Fuel Gas Code, Materials and Types of Fuel Gases
- Chapter 11 Fuel Gas Pipe Sizing
- Chapter 12 Fuel Gas Piping, Fittings and Connections
- Chapter 13 Gas Appliances, Regulators, Meters and Appliance Controls
- Chapter 14 Fuel Gas Piping Corrosion and Corrosion Protections
- Chapter 15 Vents for Category I Appliances
- Chapter 16 Gas Combustion and Controls
- Chapter 17 Study of Local Fuel Gas Code

Unit 4 – Surveying Instruments

- Chapter 18 Level and Transit, Elevations and Grades
- Chapter 19 Builders Level
- Chapter 20 Builders Transit

Unit 5 – Mathematics

- Chapter 21 Offsets
- Chapter 22 Tank Capacities, Volume and Weight of Water
- Chapter 23 Ratios and Proportions
- Chapter 24 Storm Drainage and Sizing Storm Drains

Unit 6 – Related Science

- Chapter 25 Energy and Temperature, Piping Expansion, Heat Transfer, Insulation, Humidity and Condensation
- Chapter 26 Water Treatment
- Chapter 27 Heat Transfer in Water Heaters – Solar, Stratification, Multiple Heaters and Recirculation

Unit 7 – Basic Science

Chapter 28	Basic Electricity, Electric Current and Electric Motors
Chapter 29	Electric Circuits, Circuit Protection and Electrical Safety
Chapter 30	Electric Circuit Troubleshooting
Chapter 31	Control Wiring

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Plumbing 401

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- Chapter 1 Leaks and Drainage Problems
- Chapter 2 Residential and Commercial Service and Repair
- Chapter 3 Industrial and Institutional Service and Repair
- Chapter 4 Water Piping Service and Repair
- Chapter 5 Drainage, Waste and Vent Piping Service and Repair
- Chapter 6 Fuel Gas Piping Service and Repair
- Chapter 7 Lead Product Service and Repair
- Chapter 8 Water Heater Service and Repair
- Chapter 9 Water Stoppage Service and Repair
- Chapter 10 Water Hammer Service and Repair
- Chapter 11 Controls Troubleshooting

Unit 2 – Blueprint Reading

- Chapter 12 Sizing DWV Systems
- Chapter 13 Sizing Storm Drainage Systems
- Chapter 14 Sizing Potable Water Systems
- Chapter 15 Sizing Fuel Gas Piping and Category I Venting Systems

Unit 3 – Installation Practices

- Chapter 16 Indirect Waste and Special Waste Systems
- Chapter 17 Interceptors and Backwater Valves
- Chapter 18 Protection of Water Supply – Air Gaps, Vacuum Breakers, Double Check Valve Assemblies, Reduced Pressure Zone Backflow Preventers

Unit 4 – Heating Systems

- Chapter 19 One-Pipe and Two-Pipe Steam Systems
- Chapter 20 Steam Equipment
- Chapter 21 Steam Piping
- Chapter 22 Hot Water Heating and Hot Water Specialties
- Chapter 23 Forced Hot Water Systems
- Chapter 24 Hydronic Heating and Controls
- Chapter 25 Forced Air and Humidification
- Chapter 26 Solar Systems and Conservation Methods

Unit 5 – Related Science

- Chapter 27 Hydraulic and Pump Theory
- Chapter 28 Pump Types, Pump Uses and Piping Design
- Chapter 29 Pump Performance Curves, Installation and Maintenance

Unit 6 – Blueprint Reading

- Chapter 30 Review and Shop Drawing

- Chapter 31 Water Supply and DWV Isometrics and Storm Drainage Systems
- Chapter 32 Gas Distribution Systems, Gas Appliance Venting and Specialized Components
- Chapter 33 Material Take-Off

Unit 7 – Plumbing Code

- Chapter 34 Administration and Basic Principles, Plumbing Code Definitions and General Regulations
- Chapter 35 Materials
- Chapter 36 Joints and Connections, Fittings and Appurtenances
- Chapter 37 Plumbing Fixtures and Minimum Fixture Requirements
- Chapter 38 Hangers and Supports, Indirect Waste Piping and Special Waste
- Chapter 39 Water Supply and Distribution
- Chapter 40 DWV and Storm Drain Systems
- Chapter 41 Medical Care Facility Plumbing Equipment
- Chapter 42 Tests and Maintenance
- Chapter 43 Individual Sewage Disposal Systems
- Chapter 44 Potable Water Supply Systems
- Chapter 45 Mobile Home and Travel Trailer Park Plumbing Standards