



Course Outline/Description— Plumbing and Heating



DIPLOMA PROGRAM

24 weeks – 25 semester credit hours (DAY)

52 weeks – 25 semester credit hours (EVENING)

Total 720 hours

OBJECTIVE

Plumbing and Heating* students design and build a fully functional bathroom consisting of toilet, sink, and bathtub. Water and drainage lines are installed, utilizing both hot and cold running water. Hot water heaters—electric, gas, and oil—are installed and serviced. Students are instructed in the installation and repair of forced hot air heaters, related ductwork, and hydronic heaters with radiators or baseboard units. All tasks and instructional activities are performed in conjunction with current municipal codes.

EMPLOYMENT OPPORTUNITIES

Graduates are prepared for entry-level positions in the plumbing and heating field as workers in commercial, industrial, and residential buildings. They could serve as heating service technicians and assistant plumbers and pipefitters.

COURSE TITLE	CREDIT HOURS
PH 101 Introduction to Plumbing and Heating	0.5
PH 102 Safety in Plumbing and Heating	0.5
PH 103 Electrical Theory and Application for Plumbing and Heating	2.5
PH 104 Electrical Control Systems	0.5
PH 105 Overview of Heating Systems	1.5
PH 106 Heat Installation and Service	5.5
PH 107 Heat Pump Theory	0.5
PH 108 Duct Systems	1.0
PH 109 Plumbing	7.0
PH 110 Mathematics for Plumbing and Heating	3.0
PD 616 Professional Development	2.5

** Students in this program are eligible to receive industry recognized certification from the National Occupational Competency Testing Institute (NOCTI) upon successful completion of certification exams.*



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PH 101 INTRODUCTION TO PLUMBING AND HEATING

This course familiarizes students with plumbing and heating terms and job opportunities in this field. Students learn to identify tools for use in plumbing and heating and to follow proper shop procedures. Students receive an introduction to Green Technology and Energy Efficiency in the trades.

PH 102 SAFETY IN PLUMBING AND HEATING

In this course, students learn to take proper safety precautions in the field. Safe handling and operation of tools and equipment are continuously emphasized.

PH 103 ELECTRICAL THEORY AND APPLICATIONS FOR PLUMBING AND HEATING

This course teaches the fundamentals of electricity. Various types of wire and basic electrical devices relevant to heating systems are studied. Students learn to use electrical testing instruments, including voltmeters, ammeters, and ohmmeters.

PH 104 ELECTRICAL CONTROL SYSTEMS

This course stresses the function of electrical control circuits relevant to domestic water heaters as well as hydronic heating systems. Students learn basic wiring diagrams.

PH 105 OVERVIEW OF HEATING SYSTEMS

Students are instructed in the evolution of heating systems and the identification of gas, oil, and electric warm air and hot water heating systems. They learn about controlled combustion of oil and gas and the devices required for the implementation of this function.

PH 106 HEAT INSTALLATION AND SERVICE

Students learn how to install and service gas, oil, and electric hot water and domestic water heaters. They learn the requirements for code-approved electrical, fuel, flue, and other pertinent connections for the safe installation and operation of these units.

PH 107 HEAT PUMP THEORY

The theory of heat pumps is discussed along with the advantages and disadvantages of such systems. Students learn the principles of heat transfer and study the vapor compression cycle.

PH 108 DUCT SYSTEMS

Students are taught the correct sizing of prefabricated duct systems. The course includes the study of square, round, oval, and flexible duct work as related to their use in installing duct systems.

PH 109 PLUMBING

This course teaches students how to size, install, and repair natural gas, water, and drainage systems. Students learn to repair and install basic plumbing fixtures. They are also taught the layout of residential plumbing systems and receive a thorough background in plumbing rules and regulations. Students are taught the design and installation of solar hydronic water heaters and make connections to setup a PEX system. Students are taught how to appreciate the efficiency of such a system and its green applications.

PH 110 MATHEMATICS FOR PLUMBING AND HEATING

Students are taught basic mathematical skills needed for plumbing and heating applications, such as measurement of pipes and ducts, as well as calculating area and volume.

PD 616 PROFESSIONAL DEVELOPMENT

Students learn the skills employers require for positive work relationships and long-term employment. They include targeted workplace competencies: problem solving and other cognitive skills, oral communication skills, personal qualities, work ethic, and customer service, interpersonal and teamwork skills. Students also learn about the importance of professionalism on the jobsite and employer expectations. Employment Specialists teach students effective Internet, interviewing, and job search skills.