HVAC IA-Fall 2024 (HVAC 1110)

Welcome to the HVAC Apprenticeship program! The field of HVACR (Heating Ventilation Air Conditioning Refrigeration) is mentally challenging and physically demanding. I am excited to have you in this program. I have spent my career in the HVACR industry and highly recommend it as a rewarding career path.

I understand you are a busy person, successful people are, and I strongly encourage you to set aside the time you will need to learn and master the content within each module. To facilitate this, establish a study schedule and stick to it. If you are substantially engaged in the textbooks and Pearson online materials, on a near-daily basis, your study habits will improve and your knowledge and skills will increase.

This semester, we will explore and discuss guiding principles for HVACR technicians, careers in HVACR, general safety and the safe use of tools and service equipment, and also review and improve the math skills you will need to succeed in the HVACR trade. You will also begin learning the fundamentals of electricity, basic electrical theory, and how to use a variety of meters to measure electrical quantities. Heating fundamentals and gas heating appliances will be introduced and how heat is distributed via air systems.

Attendance and engagement in the online material is critical to your success in this course. Particularly, attendance is a requirement and metric used to determine successful completion of your apprenticeship program. As per the requirements set forth in 29 CFR 29.5 Standards of Apprenticeship paragraph (b)(4), each apprentice must successfully complete a minimum of 144 hours of related and supplemental instruction each year of Apprenticeship (72 hours for each of two semesters). Each core semester-long course (HVAC IA, IB, IIA, IIB, etc.) will provide 75 hours each semester to meet the requirement of this federal standard. This 75 hours is arrived at by attending a 2.5-hour lecture once a week for 15 weeks in addition to 2.5 hours of online work each week via a Learning Management System (LMS) provided by our textbook publisher and also Canvas, a LMS used at SLCC. This means you can only miss one class period each semester, while still completing all of the online work, and pass this course.

Instructors are required to record attendance each class period. It is your responsibility to ensure you have enough clock hours to successfully complete the course. Students with insufficient clock hours will not be permitted to sit for the comprehensive Final Exam at the end of the semester. These students will receive a failing grade and be required to re-take the semester course prior to moving forward in their apprenticeship.

Final Exam – A comprehensive final will be administered at the end of each semester. This comprehensive exam may include any information covered during the semester. This will be a 60-question multiple-choice exam and must be completed within two hours. This exam will account for a major portion (25%) of your final grade. Other than a calculator and a writing utensil, no other items will be allowed during testing. (A TI-30 calculator or equivalent is recommended. Graphing or programmable calculators are not permitted. Construction Master, Electrical Pro, Project Master, or other similar calculators are not permitted. Calculators on cell phones are not allowed to be used during quizzes and exams.) This exam will account for 25% of the final grade for the class. If the student scores less than 70% on the exam, the score will be recorded as a 0 (zero).

Pay close attention to the schedule outlined below and be prepared (read the material and write down questions to ask) for the lecture. As the semester progresses, there could be a need to adjust the schedule. I will use the email function in Canvas to communicate schedule changes and reminders to the class. All assignments and quizzes in Pearson and Canvas must be completed by the due date in order to receive credit. We will meet for lecture in TAB-112 and lab activities in TAB-109.

The required textbook for this semester is *Heating, Ventilating, and Air* Conditioning, Level 1, 5th edition. This text may be available in the SLCC bookstore, if not, it is available on Amazon.com and Pearson.com. Use ISBN 0-13-518509-2 or ISBN 978-0-13-518509-4 to search and verify you are purchasing the correct textbook. I highly recommend purchasing this book instead of renting it. Some of the offerings include the access code for the LMS online material. If your book did not come with the access code, you can pay for access to the online material during the LMS registration process below. You will also need the following hand tools and meters for the labs:

- HVACR Clamp Multi-Meter UEI DL479 or similar available at some supply houses or Amazon.
- 6 in 1 screwdriver (#1 and #2 Phillips screwdrivers, 1/4" and 3/16" slotted screwdrivers, 1/4" and 5/16" nut-drivers)
- Small 1/8" flat-blade screwdriver (control screwdriver) used for installing thermostats and other control devices.
- Adjustable open-end wrench, 6"
- Adjustable open-end wrench, 8"
- Two pocket thermometers, UEI PDT650 or similar
- Magnet (approx. 2"X3/4"X1/2") or The Old Switcheroo (Google to find source)
- Refrigeration service wrench, Yellow Jacket model 60613 or similar
- Measuring tape, at least 16'
- Electrical tape
- Tubing cutter, Ridgid model 150 or similar
- Deburring tool, Yellow Jacket model 60163 or similar

We will be using a Learning Management System (LMS) on the website of our textbook's publisher—Pearson. All textbook-related assignments, and exam preparation materials, will only be available via this LMS. To be successful in this course, you must register for this course on Pearson's website and access this course frequently to supplement your study of the textbook.

To register for HVAC 1110:

1. Go to
2. Sign in with your Pearson student account or create your account.
3. Select any available access option, if asked.
    - Enter a prepaid access code that came with your textbook or from the bookstore.
    - Buy instant access using a credit card or PayPal.
    - Select Get temporary access without payment for 14 days.

4. Select Go to my course.
5. Select HVAC 1110 from My Courses.

If you contact Pearson Support, give them the course ID:

To sign in later:

1. Go to https://mlm.pearson.com.
2. Sign in with the same Pearson account you used before.
3. Select HVAC 1110 from My Courses.

The following schedule will be our guide to learning this semester. As usual, there are assignments in Pearson for each module. Due to their nature, scheduled labs will be performed as a class and cannot be made up.

August 26, 2024	HVAC IA Introduction
	Module 1 Section 1 HVACR Principles
	Canvas—Module 1 Assignment, labs, quizzes, and exam.
September 2, 2024	Labor Day Holiday—No School
September 9, 2024	Module 1 Section 2 Guiding Principles for HVACR Service Technicians
	Module 1 Section 3 Careers in HVACR
	Module 1 Review
September 16, 2024	Module 1 Exam
	Module 2 Section 1 Using the Metric System
	Canvas—Module 2 Assignments and quizzes.
September 23, 2024	Module 2 Section 2 Solving Problems Using Algebra
	Module 2 Section 3 Working with Geometric Figures
	Module 2 Review
September 30, 2024	Module 2 Exam
	Module 3 Section 1 Fundamentals of Electricity
	Canvas—Module 3 Assignments and quizzes.

October 7, 2024	Module 3 Section 2 Basic Electrical Theory
	Module 3 Section 3 Electrical Measuring Instruments
October 14, 2024	Module 3 Section 4 Electrical Components in HVACR
	Lab Activities: Wiring Basic AC Circuits, Using Electrical Meters, Identifying Common Electrical Symbols
October 21, 2024	Module 3 Review
	Module 4 Section 1 Heating Fundamentals
	Canvas—Module 4 Assignments and quizzes.
October 28, 2024	Module 3 Exam
	Module 4 Section 2 Gas Furnaces
November 4, 2024	Module 4 Section 3 Hydronic and Electric Heating Systems
	Module 4 Review
	Lab Activities: Furnace Types and Sequences of Operation, Measuring Delta T and Determining/Adjusting Delta T
November 11, 2024	Module 4 Exam
	Module 6 Section 1 Air Movement and Air Measurement
	Canvas—Module 6 Assignments and quizzes.
November 18, 2024	Module 6 Section 2 Air Distribution Equipment and Materials
	Module 6 Section 3 Air Distribution System Design and Energy Conservation
November 25, 2024	Module 6 Lab Activities: The Effect of Duct Static Pressure on Motor Amps, Measuring Air Velocity and Calculating Air Volume Delivery
	Module 6 Review
December 2, 2024	Module 6 Exam
	Course Review and Final Exam Preparation
December 9, 202	Final Exam

Your final grade for the semester will be calculated as follows:

Assignments and Labs	35% of final grade
Module Exams	40% of final grade
Final Exam	25% of final grade

The following grading standards will be used in this class:

Grade	Range
A	100% to 94%
A-	< 94% to 90%
B+	< 90% to 87%
B	< 87% to 84%
B-	< 84% to 80%
C+	< 80% to 77%
C	< 77% to 74%
E	< 74% to 0%