



This NATE recognized online training is perfect for your busy schedule. You can study at your own pace and at any time of the day or night. Spend as much time as needed on a certain page or subject or move along more quickly. As with "in-class" courses, you have instructor support as well. If you have questions for the instructor, just send an e-mail and you will have an answer within 24 hours. You have subscription access to each course for 60 days. Our courses contain 6 modules that cover specific HVACR concepts by incorporating a presentation that utilizes some or all of the following: text reading assignments, web site tours, applied exercises, online quizzes, industry terminology definitions, video clips, animations, images and downloadable/printable handouts. Each module concludes with a 20-question module specific exam. All courses are finished after completing a 25 question comprehensive final exam. A minimum passing score of 75% overall is required for a successful completion. Each course is the equivalent of 1.5 semester credits or 18 NATE CEUs. The NATE CEUs are recognized training hours applicable to NATE recertification. Our offerings are listed below by category: Courses, Reviews, NATE Exam Prep Reviews, Pre-Certification Assessments, and Technical Core Assessments

Courses – Foundation, Intermediate, Advanced

101 HVACR Fundamentals *Foundation*

This online course provides an introduction to the HVACR basic fundamentals and terminology. The content of the course is dedicated to applied physics concepts that are utilized in HVACR systems. Subjects include topics on measurements, heat, pressure, gas properties, and air properties. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Six modules cover:

- Introduction to the Industry
- Measurements
- Heat energy
- Pressure
- Gas Works
- Air Works

102 HVACR Safety *Foundation*

This online course covers the basic safety considerations of the HVACR workplace. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Presentations and coursework are in six modules that cover:

- Labels, Materials Safety Data Sheets, and Safety Training)
- Personal Protective Equipment (PPE)
- Personal Safety in Confined Space and on Ladders
- Fire Extinguishers and Compressed Gasses
- Electrical Lockout / Tag out
- Back Safety, Scaffolds/Lifts, and Fall Protection

103 HVACR Basic Sheet Metal *Foundation*

This course is designed to assist HVAC Technicians and others involved in the HVAC industry with a basic understanding of sheet metal. Sheet metal work is essential to HVAC work. An HVAC tech doing a furnace change out, for instance, will need to fit the new furnace to the plenum, which may involve designing or building an adapter. The idea of taking a flat piece of metal and forming it into something useful, functional or decorative can be one of the most fascinating aspects of HVAC work. The main topics for the course are:

- Types of Sheet Metal and Their Uses
- Assembling, Connecting, and Fastening Sheet Metal Components
- Sheet Metal Tools and Their Uses
- Sealing, Insulating and Lining Sheet Metal Ductwork
- Introduction to Sheet Metal Duct Layout and Fabrication
- Methods of Layout and Development

111 HVACR Electrical DC Theory Plus *Foundation*

This online course is an introduction to basic electrical theory such as the electron, Ohms Law, circuit schematic symbols, circuit characteristics and measurements as applied to DC & AC circuits in the HVACR industry. This online course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Six modules cover:

- Introduction to the Industry
- What is Energy
- Atomic Theory
- Basic Circuits
- Parallel Circuits
- Power

112 HVACR Electrical AC Theory Plus *Intermediate*

An online continuation of the Electrical 111 course, concepts presented and discussed are oriented towards alternating current production and application to devices utilized in HVACR systems. We will cover magnetism, alternating current, two types of loads, capacitors, values of load devices and their calculations, and transformers. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Six modules cover:

- Magnetism
- Alternating current
- Loads, Resistive and Inductive
- Capacitors
- Resistance
- Transformers

113 HVACR Electrical Common Components *Advanced*

This online course covers common control components found in HVACR systems, a logical continuation of the 112 course. Presentations and examples are given for specific devices and their electrical sequence of operation in normal HVACR applications. The final modules discuss wiring and schematic reading. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. The six modules cover:

- Control Methods, Temperature & Pressure
- Residential Heat / Cool Thermostats @ Low Voltage
- Really Good Relay Stuff
- Contactors go / Starters go with protection
- Power wiring
- Odds and ends around a schematic

114 HVACR Electrical Motors *Advanced*

This online course is dedicated to common single-phase and small three-phase electric motors. Presentations focus on basic motor theory, common types of motors, starting components and protection devices. We will also develop diagnostic skills for motor troubleshooting and replacement. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Six modules cover:

- Basic Electric Motor Theory
- Open and Hermetic Motors
- Capacitor Motors
- Three-phase Motors
- The Application of Electric Motors
- Diagnosing and Replacing Electric Motors

121 HVACR Systems Air Properties and Measurement *Intermediate*

This online course is the introduction to HVAC comfort systems. In this course we will discuss heat energy, the conditions of human comfort, the psychrometric chart and plotting various air conditions upon it. We will complete the course by introducing the terms, concepts, measurements, and calculations of moving air. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Six modules cover:

- Heat Energy and Comfort
- Properties of Air
- Psychrometrics
- Total Heat In Air
- Measuring a Heavy Invisible Moving Volume
- Air Flow Measurement

122 HVACR Systems II, Load Calculations *Advanced*

This online course is all about calculating the heat transfer into or out of a residential structure. The presentations and course work are designed to develop and exercise your ability to perform heat loss and heat gain calculations. The required text is ACCA Manual J 8th Ed AE. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Six modules cover:

- Heat Loads Introduction
- Conduction Loads
- Solar Gain
- Infiltration & Ventilation Loads
- Duct Loads
- Complete Heat Loads

131 HVACR Oil Heat I *Intermediate*

This online course is designed to introduce the concept of combustion in basic terms. The focus will be on the current direct-vent systems and the traditional high-pressure gun burner. It will prepare

technicians to install, maintain, and repair residential and small commercial burner systems up to 400,000 BTUs/hour. We will explore all the mechanical, electrical, and accessory devices commonly found in the modern fuel oil heating systems. With this knowledge, we will build troubleshooting skills and identify applicable codes as they pertain to the installation and use of these systems. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Six modules cover:

- Characteristics of Fuel Oil and Principles of Combustion
- Types and Construction of Oil Burners
- Oil Burner Anatomy (part one)
- Oil Burner Anatomy (part two)
- Fuel Oil Tanks and Piping
- Complete Heating Systems

132 HVACR Oil Heat II *Intermediate*

This course is a continuation Of Oil 131 which covered the basic concepts of Oil Heat. In this course we will offer a review of Basic Electrical Principles that are needed for a technician to effectively diagnose electrical problems in Oil Heat Systems as well as other electrical subjects such as operating, safety and primary controls. Oil tank installation concerns, especially code requirements will be studied. NFPA 31 will be referenced along with the equivalent local code from where a student may live and work. The annual tune up and combustion efficiency will also be part of this course.

- The Oil Burner Circuit
- Control Wiring and Operational Safety Controls
- Primary Controls
- Oil Tank Installation
- The Annual Tune Up
- Combustion Efficiency Testing

133 HVACR Gas Heat I *Intermediate*

This course will provide knowledge and skills towards becoming a highly skilled technician who will install, maintain, and repair residential and small commercial Gas Heat Systems. We will explore all the mechanical, electrical, and accessory devices commonly found in the modern Gas Heating Systems. With this knowledge, we will build troubleshooting skills and identify applicable codes as they pertain to the installation and use of these systems. Also extremely important is the focus on safety for the technician, the building, and its occupants. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Six modules cover:

- Fuel Gas Composition
- Pressure Regulators, Burners, and Heat Exchangers
- Standing Pilot Systems
- Electronic Ignition
- High Efficiency Furnaces
- Troubleshooting Gas Burner Systems

135 HVAC/R Heat Pump / Air to Air *Intermediate*

This course is designed for a technician as an introduction to reverse-cycle heat pumps. Content covers the components and operational differences of a heat pump vs. a straight cooling system. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Modules cover:

- The heat pump concept
- Valving arrangements
- Control systems
- Common installation criteria
- Heat pump service

141 HVACR Refrigeration I *Intermediate*

HVAC/R Refrigeration 141 is designed to provide a thorough examination of the refrigerant circuit as it is applied to both air conditioning and refrigeration purposes, and to provide a practical and systematic method to diagnose problems in the refrigerant circuit. If you understand the parameters governing the operation of the refrigerant circuit, you will be able to diagnose any piece of equipment. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Modules cover:

- Basic Refrigeration Cycle Physics
- Condensation and Condensers
- Expansion and Metering Devices
- Evaporation and Evaporators
- Compression and Compressors
- Measure the Normal Cycle

142 HVAC/R Refrigeration II *Advanced*

This course is a continuation and the next step above 141 HVAC/R Refrigeration. Presentations will describe the application of common accessories found in a system, piping arrangements, sizing considerations and system operation. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Modules cover:

- Refrigerants
- Compressor accessories and applications
- Low side accessories and applications
- High side accessories and applications
- Piping system sizing and applications
- Capacity control methods

151 HVACR Controls I *Intermediate*

This online course is not so "fundamental" but is where you start when just dealing with controls. A good understanding of common HVAC systems is a prerequisite of this course. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Module topics are:

- The Building and HVAC Systems
- Air Circulation and Air Quality
- Control System Characteristics
- Process Characteristics and Control Systems
- Control System Components
- Control System Categories

152 HVACR Controls II *Advanced*

This course is an introduction to the primary concepts that lead to the dominant building controls systems, DDC and all its variants including Energy Management. Module topics are:

- Psychrometrics

- Pneumatic Control Basics
- Pneumatic Controls
- Electric Controls
- Electronic Controls Fundamentals
- Microprocessor Based/DDC

153 HVACR Controls III *Advanced*

This course is designed to introduce HVACR Technicians, and others involved in the HVACR industry, to basic networking concepts and terminology. This course will help those desiring to work in the building automation field, to establish a strong foundation of standard network terminology and concepts. The main topics for the course are identified below:

- Introduction to Networks
- OSI and Other Network Models
- Taking It From the Topology
- Stringing It All Together
- Transporting Data
- Network Addressing

154 HVACR Controls IV *Advanced*

This course is designed to introduce HVACR Technicians, and others involved in the HVACR industry to DDC networking types, concepts, and terminology. The main topics for the course are identified below:

- Control Drawings
- DDC Controller Fundamentals
- DDC Systems Architecture
- BACnet
- Open Systems and LonWorks Platform
- Specifications

155 HVAC/R Controls Operator Interfaces and Energy Management Strategies *Advanced*

This course is designed to introduce HVAC/R Technicians, and others involved in the HVAC/R industry, to the ways of interacting with building automation systems. They will also learn the basic energy management strategies for several HVAC systems. The students will learn the relationships of GUI's, control drawings, and D.D.C. points. The main topics for the course are identified below:

- Operator Interface Methods
- Scheduling
- Chilled Water System Controls
- Condenser Water Controls
- Hot Water System Controls
- Air Handling Units Controls

156 HVAC/R Controls Fundamentals of D.D.C. Programming Logic *Advanced*

This course is designed to introduce HVAC/R Technicians and others involved in the HVAC/R industry to the fundamentals of programming logic. The students will learn about logic flow diagrams, and some of the different types of programming found in the industry. The student will also study the programming logic of the systems covered in Controls 155. The main topics for the course are identified below:

- Basic Programming Logic 1
- Basic Programming Logic 2
- Chilled Water Systems Programming
- Condenser Water Systems Programming
- Hot Water Systems Programming
- Air Handling Programming

161 HVACR Boilers I *Intermediate*

This course is designed to introduce the concepts and terminology of heating and power boilers. The main focus of the course will be on commercial and industrial boilers.

- Boiler Fundamentals
- Classifying Boilers
- Combustion
- The Heat Exchanger
- Controlling energy Sources
- Boiler Accidents/Hazards

171 HVACR Boilers Low Pressure License Prep *Intermediate*

This online course is designed to introduce the concepts and terminology of heating and power boilers. The main focus of the course will be on commercial and industrial boilers. The content covers the required knowledge for proper and safe low pressure boiler system operations. Individual Mentored students are enrolled for a 90 day term. The content is covered in the 9 modules outlined below:

- Introduction to the industry
- Classifying Boilers
- Combustion
- The Heat Exchanger
- Controlling Energy Sources
- Boiler Accidents / Hazards
- Pumps
- Heat Transfer Units
- System Accessories

191 HVACR Hydronics I *Intermediate*

This is the initial course on hydronic heating systems. This online course begins a series of courses that address hot water heating systems. This course is NATE recognized for 18 hours of continuing education units (CEUs) applicable to NATE recertification. Module topics covered:

- System concept
- Materials and Tools
- Boilers
- Pumps
- Heat Transfer Units
- System Accessories

240 HVACR Advanced Troubleshooting *Advanced*

This comprehensive course will help technicians move through a procedure to follow safety guidelines, identify the source of problems in HVACR systems, use diagnostic tools, and to address the problem properly. Often technicians start their investigation with only the customer's call, "It died yesterday!"

This course is NATE recognized for 21 hours of continuing education units (CEUs) applicable to NATE recertification. The course is divided into 7 modules covering the topics listed below:

- Electrical Troubleshooting
- Advanced Controls Troubleshooting
- Troubleshooting instrumentation
- Troubleshooting the Air Side of Systems
- Troubleshooting Refrigeration

- Troubleshooting Combustion
- Troubleshooting Hydronics

R - 410A Refrigerant Technology for HVAC/R Technicians

An online course combined with a comprehensive 215 page Manual:

R-410A Refrigerant Technology for HVAC/R Technicians

R - 410A Technology for the HVACR Technician is designed to familiarize the technician with the differences between R - 22 and R - 410A. Background, regulations, impact on the industry, and application requirements will be presented. The course will also provide the technician with practical knowledge for safe performance of service techniques on systems containing R - 410A. If you understand the parameters of this course and then successfully complete the final examination, you will comply with many equipment manufacturers policies requiring safety and service "certification" prior to purchasing equipment containing R - 410A refrigerant. This course is NATE recognized for 8 hours of continuing education units (CEUs) which are applicable to NATE recertification. Modules cover:

- * R - 410A Refrigerant Background
- * R - 410A Refrigerant Regulatory Requirements
- * R - 410A Refrigerant Basics
- * R - 410A Refrigerant Safety, Handling, and Service Consideration
- * R - 410A System Components, Retrofitting, and Charging
- * R - 410A System Troubleshooting

Text Books for Courses	
Course	Text (All available through Campus Store)
Fundamentals 101 & 102 Electrical 111 Electrical 112 Electrical 113 Electrical 114 Systems 121 & 122 Heating Gas 133 & 134 Refrigeration 141 & 142 Hydronics 191	Delmar: Refrigeration and Air Conditioning Technology, 5E (Hardcover), Whitman, Johnson, Tomczyk, ISBN 1-4018-3765-4
Systems 122 (Required)	ACCA Manual J (AE) ISBN 1-892765-28-4
Heating 131 Oil Heating 132 Oil	NORA Oil Heat Technician's Manual No ISBN
Boilers 161 Boilers 171 (Required)	Low Pressure Boilers, 2nd Edition, Frederick M. Steingress, Daryl R. Walker ISBN 0-8269-4350-0

Review Courses

050 HVACR Applied Math Review *Foundation*

A course designed to refresh and exercise common math concepts as applied to the HVACR workplace. This course provides demonstrations and exercises of the four basic math functions; addition, subtraction, Multiplication and division. Each of the four functions is exercised using HVACR workplace applications. Each of the four math functions are applied to:

- Whole numbers
- Fractions
- Decimals

NATE Exam Prep Review

Each review comes with random selection exams that include immediate feedback. With these exams available on demand, you can continually test yourself and improve the areas that you need most. Online learning tools include:

- * Downloadable study handouts
- * User-friendly navigation
- * Linked resource sites for additional study
- * 30-day access
- * Video clips on key points

NATE Core Service Review

This online review is designed to prepare technicians for the NATE Core Service Certification exam. The review covers in detail the same main topics as the NATE Core Service:

- *HVAC Fundamentals
- *HVAC Air Side Knowledge
- *HVAC Electrical Knowledge

NATE Gas Heating (Air) Service Review

This online review is designed to prepare technicians for the NATE Gas Heating (Air) Service Certification exam at either the Installation or Service level. The review is done in three very comprehensive sections covering:

- * HVAC Electrical Knowledge
- * Gas Heat Specific Knowledge
- * Air Side Knowledge

NATE Air-to-Air Heat Pump Service Review

This online review is designed to prepare technicians for the NATE Air to Air Heat Pump Service Certification

exam at either the Installation or Service level. The review is done in four very comprehensive sections covering:

- * HVAC Electrical Knowledge
- * Air Side Knowledge
- * Refrigeration Cycle Knowledge
- * Heat Pump Specific Knowledge

NATE Oil Heating (Air) Service Review

This online review is designed to prepare technicians for the NATE Oil Heating (Air) Service Certification exam at either the Installation or Service level. The review is done in three very comprehensive sections covering:

- * HVAC Electrical Knowledge
- * Oil Heat Specific Knowledge
- * Air Side Knowledge

NATE Hydronics Oil Service Review

This online review is designed to prepare technicians for the NATE Hydronics Oil Service Certification exam

at either the Installation or Service level. The review is done in three very comprehensive sections covering:

- * HVAC Electrical Knowledge
- *Hydronics Knowledge
- *Oil Heat Specific Knowledge

NATE Hydronics Gas Service Review

This online review is designed to prepare technicians for the NATE Hydronics Gas Service Certification exam at either the Installation or Service level. The review is done in three very comprehensive sections covering:

- * HVAC Electrical Knowledge
- *Hydronics Knowledge
- * Gas Heat Specific Knowledge

Pre-Certification Assessment (PCA)

This series of online assessments is designed to assess general and specific HVACR technical knowledge. The focus of this program is **NATE Certification** or a similar HVACR industry examination, which

establishes an individual's level of professionalism and technical competence. Exam content is randomly selected from a pool of content categories and then compiled as a total exam. The weighting of the content category depends on what exam is being taken. Content categories include:

- Customer Service
- Trade Math
- HVAC Applied Physics
- HVAC Electrical
- Air Distribution Specific
- Water Distribution Specific
- Fuel Gas Specific
- Air Conditioning Specific
- Heat Pump Specific

After you complete and submit your exam you will receive a performance report that you can print. This report will show your areas of strength and weakness based on your assessment. Your report will recommend a specific course of action to follow regarding additional study or indicate that you are prepared for your certification exam.

The pre-certification assessment (PCA) depends on the NATE certification you are preparing for:

- **NATE Core Installation PCA** - Available Now
- **NATE Core Service PCA** - Available Now
- **NATE Air Conditioning Installation PCA**
- **NATE Air Conditioning Service PCA** – Available Now
- **NATE Air to Air Heat Pump Installation PCA**
- **NATE Air to Air Heat Pump Service PCA** - Available Now
- **NATE Gas Heating (Air) Installation PCA**
- **NATE Gas Heating (Air) Service PCA** - Available Now
- **NATE Oil Heating (Air) Installation PCA**
- **NATE Oil Heating (Air) Service PCA**
- **NATE Air Distribution Installation PCA** – Available Now
- **NATE Air Distribution Service PCA** - Available Now
- **NATE Hydronics Gas Service PCA**
- **NATE Hydronics Oil Service PCA**

ICP Corporate Retail Pricing for www.icpcampus.net

COURSES – NATE Recognized Training

Course Name	Suggested Retail Pricing
Fundamentals 101 (F)	\$185
Fundamentals 102 (F)	\$185
Electrical 111 (F)	\$185
Electrical 112 (I)	\$200
Electrical 113 (A)	\$225
Electrical 114 (A)	\$225
Systems 121 (I)	\$200
Systems 122 (A)	\$225
Heating (Oil) 131 (I)	\$200
Heating II (Oil) 132 (I)	\$200
Heating (Gas) 133 (I)	\$200
Heat Pumps 135	\$200
Refrigeration 141 (I)	\$200
Refrigeration 142 (A)	\$225
Controls 151 (I)	\$200
Controls 152 (A)	\$225
Controls 153 (A)	\$225
Controls 154 (A)	\$225
Controls 155 (A)	\$225
Controls 156 (A)	\$225
Boilers 161 (I)	\$200
Boilers 171 LP Prep*	\$285
Hydronics 191 (I)	\$200
IN DEVELOPMENT	
Systems 123 (A)	\$225
Heating (Gas) 134 (A)	\$225
Boilers 162 (A)	\$225
Accessories 181 (I)	\$200
Hydronics 192 (A)	\$225

(F) = Foundations; (I) = Intermediate; (A) = Advanced

Each course is 60 days long. The course will conclude with a 25 question final exam.

*Boilers 171 LP Prep requires a text book which is not included in the price table above

To schedule a class contact the ICP Training Coordinator:
 Email: training@icpusa.com
 Phone: 931-270-4301

NATE REVIEW SERIES

Course Name	Suggested Retail
050 Applied Math Review	\$85
NATE Core Service / Install	\$79
NATE Gas Heat Service	\$79
NATE Gas Hydronics	\$79
NATE Heat Pump	\$79
NATE Oil Heat Service	\$79
NATE Oil Hydronics	\$79
IN DEVELOPMENT	
NATE Air Conditioning	\$79
NATE Air Distribution	\$79

PCA – Pre Certification Assessment

Air Distribution Service Level	\$34
Core Installation Level	\$34
Core Service Level	\$34
Gas Service Level	\$34
Heat Pump Service	\$34
IN DEVELOPMENT	
Air Conditioning Installation Level	\$34
Air Conditioning Service Level	\$34
Air Distribution Installation Level	\$34
Gas Installation Level	\$34
Hydronics Gas Installation Level	\$34
Hydronics Gas Service Level	\$34
Hydronics Oil Installation Level	\$34
Hydronics Oil Service Level	\$34
Oil Installation Level	\$34
Oil Service Level	\$34
Heat Pump Installation	\$34

To schedule a class contact the ICP Training Coordinator

Email: training@icpusa.com
Phone: 931-270-4301