

**NEBB**

8575 Grovemont Circle | Gaithersburg, MD 20877

Main – 301.977.3698 | Fax – 301.977.9589

[www.nebb.org](http://www.nebb.org)

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## NEBB Online E-Learning Courses

*If you're a NEBB certification Candidate looking to enhance your knowledge as part of your self-study process, **OR** if you are a NEBB Certified Professional or Certified Technician who needs continuing education, **OR** if you are an employer looking for an efficient way to train new employees in specific areas, NEBB has a cadre of affordable online courses to choose from!*

### Details:

1. Individuals can select the online course(s) of their choice from the ala carte online course menu below.
2. Online courses range from 1.5 to 7 professional development hours.
3. Online courses are available in Imperial Standard (I-P); some are available in Metric (SI).
4. Individuals have a 12-month access to the online courses once they register.
5. Each online course has a test at the end of the instruction.
6. Individuals must achieve 80% or higher to pass and receive the Certificate of Online Course Completion
  - a. The final test has unlimited attempts.
  - b. If the user fails the test, they can retake as many times as they want until they pass the course.
  - c. There is no charge for retaking the test.
7. At completion of each online course, NEBB Individuals will receive a Certificate of Completion available electronically through the ASHRAE portal.
8. Interested individuals should complete the order form at the end of this document to enroll for the course (s) of their choice.
9. **Questions? Call NEBB at 301-977-3698!**

*This online eLearning program has been made available through a cooperative venture between ASHRAE and NEBB.*

### NEBB's Ala Carte On-line Course Menu

#### **Airflow, Equipment Placement and Heat Release (Advanced Level: CPT) Metric**

This course provides airflow guidelines for the placement of data processing and communication equipment.

**Cost: \$55.00**

This module is approved by NEBB for **1.0 professional development hours**

#### **Basics of Electricity (Essentials Level I: TAB, BSC, FHT, RCx) Imperial & Metric**

This module provides the electrical knowledge needed to understand controls and the use of electrical circuit drawings.

After completing this module, you will be able to:

- Apply basic electricity concepts to simple electrical circuits
- Calculate volts, watts, and amps using Ohm's law and the Power law
- Calculate voltage for resistances in series
- Calculate combined resistance for resistances in parallel
- Recognize the effect of capacitors and inductors on current and on voltage
- Recognize the configuration of 3-phase, 4-wire service
- Comprehend the use and function of relays
- Apply basic electricity concepts to simple electrical circuits.
- Recognize how motor starters function
- Identify the advantages for variable speed drives for fans
- Identify relay logic using electrical circuit drawing

**Cost: \$55.00**

This module is approved by NEBB for **4.5 professional development hours**

### **Building Facility and Chilled-Water Systems (*Advanced*) Imperial & Metric**

This course discusses the requirements of the interface that exists between facilities and Datacom equipment.

**Cost: \$55.00**

This module is approved by NEBB for **2.0 professional development hours**

### **Central Plants (*Essentials Level II*) Metric**

This course covers the major equipment that comprise central plants. Topics include equipment sizing, plant configurations, efficiency impacts, and metrics, among others. The course identifies how the individual components work, and how they operate together as a central plant.

**Cost: \$60.00**

This module is approved by NEBB for **2.0 professional development hours**

### **Control Diagrams and Sequences (*Essentials Level II: TAB, BSC, FHT, RCx*) Metric**

This module explains the use of written specifications, schedules, and drawings to clearly identify what is to be installed, how it is to be installed, and how it is expected to operate. After completing this module, you will be able to:

- Apply design concepts that will result in a workable and flexible control systems
- Recognize the responsibilities of the various designers and contractors in the typical control system design and construction process.
- Interpret a control diagram using standard symbols.
- Interpret guidelines for writing a control sequence.

**Cost: \$55.00**

This module is approved by NEBB for **3.5 professional development hours**

### **Control Valves and Dampers (*Essentials Level I: TAB, BSC, FHT, RCx*) Metric**

This module teaches the various types of valves and dampers, and their selection, installation and operation.

After completing this module, you will be able to:

- Identify valve parts and valve types
- Select valves based on their characteristics for various applications
- Discriminate between 2-way and 3-way valve characteristics and performance
- Calculate pressure drop and the valve flow coefficient.
- Recognize the types and appropriate uses of dampers for air flow control in various applications
- Understand damper leakage ratings and how they are used
- Determine damper pressure drops
- Determine damper size

**Cost: \$55.00**

This module is approved by NEBB for **6.5 professional development hours**

### **Controls (*Essentials Level I*) Metric**

This course is about understanding the types of controls and control loops, DDC point types, and protocol to ensure communication between DDC systems.

**Cost: \$55.00**

This module is approved by NEBB for **2.5 professional development hours**

### **DDC Introduction to Hardware and Software (*Essentials Level I: BSC, RCx*) Metric**

This module explains Direct Digital Controls (DDC) components, their inputs and outputs, and the programming of DDC routines.

**Cost: \$55.00**

This module is approved by NEBB for **4.5 professional development hours**

### **DDC Specification, Installation and Commissioning (*Essentials Level I: BSC, RCx*) Imperial & Metric**

Understanding interoperability of controllers, network and data protocols with an introduction to BACnet and LonWorks. After completing this module, you will be able to:

- Recognize advantages and challenges of DDC systems
- Comprehend the DDC design process
- Be aware of several interoperability and bidding issues

**Cost: \$55.00**

This module is approved by NEBB for **4.5 professional development hours**

### **Essentials of Controls *(Essentials Level I) Metric***

This course introduces controls and their basic types. It explains why they can be complex, but why they are essential to most HVACR systems. It lays the groundwork for more advanced specifications, implementation, and troubleshooting skills.

**Cost: \$60.00**

This module is approved by NEBB for **1.5 professional development hours**

### **Humidity Control Design: Basic Principles, Loads and Equipment *(Professional) Imperial & Metric***

This course provides HVAC designers and building owners with the knowledge and techniques to control humidity issues.

**Cost: \$55.00**

This module is approved by NEBB for **3.0 professional development hours**

### **Indoor Environmental Conditions for Human Comfort *(Essentials Level II) Metric***

This course covers the basics of human comfort in the built environment. Topics covered include comfort and health criteria, thermal comfort, factors influencing thermal conditions, zoning, indoor air quality, limiting indoor air contaminants, and room air distribution.

By the end of this course you will be able to:

- Identify the human factors that influence comfort in the built environment
- Recognize comfort and health criteria for the various spaces in the building
- Relate and apply specific standards and references for indoor environmental conditions for human comfort
- Use multiple tools to apply principles of thermal conditions to varying building scenarios
- Establish optimum zoning controls for select building spaces
- Set ventilation rates for occupied spaces to reduce contamination and provide oxygen
- Know and select appropriate HVAC system filters that reduce contamination and odors
- Plan distribution of air diffusers and grilles to achieve optimum building comfort

**Cost: \$60.00**

This course has been awarded **1.5 professional development hours**

### **Introduction to HVAC Design *(Essentials Level I) Metric***

This course covers background historical data beginning with one of the first installations of comfort cooling in the New York Stock Exchange. It goes on to define the scope and functions of modern HVAC systems and introduces the reader to the requirements of HVAC systems for maintaining human comfort in the built environment.

**Cost: \$60.00**

This module is approved by NEBB for **1.5 professional development hours**

### **Introduction to HVAC Systems *(Essentials Level I: TAB, BSC, FHT, RCx) Metric***

This module will provide you with an understanding of simple psychrometric charts and how to use them. It also provides a description of basic system components and operation of the economizer cycle. Upon completion of this module, you will be able to:

- Identify terms used in the psychrometric charts
- Identify important components of the psychrometric charts
- Plot conditions on the psychrometric charts
- Use the psychrometric charts to interpret data

**Cost: \$60.00**

This module is approved by NEBB for **3.5 professional development hours**

### **Multiple Zone Air Systems *(Essentials Level II) Metric***

This course introduces systems to deal with situation where the instantaneous load varies from zone to zone.

**Cost: \$55.00**

This module is approved by NEBB for **2.0 professional development hours**

### **Psychrometrics *(Essentials Level II: TAB, BSC, CPT, RCx) Metric***

This course covers the theory behind and use of the psychrometric chart, the origin of the chart and how it is used in the process of determining HVAC requirements. This course will familiarize the learner with the use of the chart and the information that can be determined for atmospheric air knowing two of the conditions of that air. Learn about the four processes that can be determine by using the chart (heating, cooling, humidification and dehumidification).

**Cost: \$60.00**

This module is approved by NEBB for **1.5 professional development hours**

### **Single Zone Air Handlers & Unitary Equipment (Essentials Level II) Metric**

This course covers calculation/ maintenance of mixed air temperature with Single-Zone Air Handlers and Refrigeration. Equipment.

**Cost: \$55.00**

This module is approved by NEBB for **3.0 professional development hours**

### **Solar Decathlon Building Science Education (Essentials Level II) Imperial & Metric**

The Solar Decathlon Building Science Education series is designed to educate students and working professionals on building science principles that are paramount to the successful design of high-performance, energy-efficient buildings.

**Cost: \$60.00**

This module is approved by NEBB for **6.5 professional development hours**

### **Ventilation and IAQ (Essentials Level II) Metric**

This module will provide you with an understanding of the types, sources and effects of air contaminants and how to control them, as well as the basic concepts of ASHRAE Standard 62.1 Upon completion of this module you will be able to:

- Identify types and sources of indoor air contaminants and pollutants
- Comprehend the effects of pollutants and contaminants on health
- Comprehend the basic concepts of the ASHRAE Ventilation Standard 62.1-2004

**Cost: \$55.00**

This course has been awarded **3.0 professional development hours**

### **School of Hard Knocks: Controlling Moisture & Humidity in Buildings (Intermediate: TAB, BSC, BET, RCx) Imperial & Metric**

This course shows how dry buildings are healthier and more resilient, comfortable and energy-efficient than damp or moldy buildings. Dry buildings have better indoor air quality, and cost less to operate, last longer, and hold less financial and professional risk for their designers and builders, given that moisture problems are the leading cause of claims against errors and omissions insurance of architects, engineers and contractors.

**Cost: \$55.00**

This module is approved by NEBB for **3.0 professional development hours**

### **Standard 62.1-2010 Ventilation Rates (Essentials Level II: TAB, BSC, RCx, CPT) Imperial & Metric**

This course explains the Ventilation Rate Procedure and introduces indoor air quality.

**Cost: \$55.00**

This module is approved by NEBB for **3.0 professional development hours**

#### **NEBB Ala Carte Online Course Registration Process**

1. Interested individuals should complete the order form included with this document and email to [certification@nebb.org](mailto:certification@nebb.org). *Questions? Call NEBB at 301.591.0488.*
2. NEBB collects the fees from the individual for each Ala Carte online course.
3. NEBB sends ASHRAE a list of individuals (s) who paid for the course (s) within 24 hours of payment.
  - a. The list includes individual's first name, last name, email address, and course (s) paid for.
4. ASHRAE creates accounts for each individual.
5. ASHRAE enrolls each individual into the course.
6. ASHRAE sends an email to individual with eLearning portal access credentials and the url to access the course.
7. Individual logs in to complete the online course.
8. If individual has difficulties with login or course access, contact [elarning@ashrae.org](mailto:elarning@ashrae.org). This support email address can also be found in the eLearning portal.
9. Once the individual completes the course materials and final test, an electronic Certificate of Completion will be emailed to them to print for their records.
10. Payment of the fee for each course guarantees an enrollee 12 months access to the respective course.

**Order form and payment options on next page.**

	PDHs	Description	Unit Price	System	Line total
1	1.0	Airflow, Equipment Placement & Heat Release	\$55.00	Dual	
2	4.5	Basics of Electricity	\$55.00	SI	
3	2.0	Building Facility and Chilled-Water Systems	\$55.00	SI	
4	2.0	Central Plants	\$60.00	SI	
5	3.5	Control Diagrams and Sequences	\$55.00	SI	
6	6.5	Control Valves and Dampers	\$55.00	SI	
7	2.5	Controls	\$55.00	SI	
8	4.5	DDC Intro to Hardware & Software	\$55.00	SI	
9	4.5	DDC Specification, Installation and Commissioning	\$55.00	SI	
10	1.5	Essentials of Controls (New!)	\$60.00	SI	
11	3.0	Humidity Control Design: Basic Principles, Loads and Equipment	\$55.00	Dual	
12	1.5	Indoor Environmental Conditions for Human Comfort (New!)	\$60.00	SI	
13	1.5	Introduction to HVAC Design (New!)	\$60.00	SI	
14	3.5	Introduction to HVAC Systems (New!)	\$60.00	Dual	
15	2.0	Multiple Zone Air Systems	\$55.00	SI	
16	1.5	Psychrometrics (New!)	\$60.00	SI	
17	3.0	Single Zone Air Handlers and Unitary Equipment	\$55.00	SI	
18	6.5	Solar Decathlon Building Science Education (New!)	\$60.00	Dual	
19	3.0	Ventilation and IAQ	\$55.00	SI	
20	3.0	School of Hard Knocks: Controlling Moisture & Humidity in Buildings	\$55.00	Dual	
21	3.0	Ventilation Rate Procedure	\$55.00	Dual	
				Subtotal	
				Total	

Name \_\_\_\_\_ Date \_\_\_\_\_

Company \_\_\_\_\_ Email \_\_\_\_\_

City/State/Zip \_\_\_\_\_ Phone \_\_\_\_\_



Amount \_\_\_\_\_

Credit Card # \_\_\_\_\_ Exp Date \_\_\_\_\_ SC \_\_\_\_\_