



# ASHRAE eLearning Center

ASHRAE is an continuing education provider of the American Institute of Architects (AIA) and the Green Building Certification Institute (GBCI), a third party certification administrator of the United States Green Building Council (USGBC).

Continuing Education (CE) hours earned from ASHRAE courses may be applied toward maintenance of state-licensed professionals (Architects and Professional Engineers) and LEED credentials.

| Course/Package/Library Name   | Training Level      | Subject            | PDHs        | Non-Member   | Member       | Units | Library                   |
|---|---------------------|--------------------|-------------|--------------|--------------|-------|---------------------------|
| <b>Building Performance Course Package</b>                            |                     |                    | <b>10.0</b> | <b>\$105</b> | <b>\$89</b>  |       |                           |
| 1 Commissioning   | Essentials Level II | Commissioning      | 4.0         | \$50         | \$42         | I-P   | HVAC Design and Operation |
| 2 Integrated Design   | Intermediate        | Green Buildings    | 3.0         | \$50         | \$42         | I-P   | HVAC Design and Operation |
| 3 School of Hard Knocks: Controlling Moisture & Humidity in Buildings | Intermediate        | Indoor Air Quality | 3.0         | \$50         | \$42         | Dual  | HVAC Design and Operation |
| <b>System Design Course Package</b>                                   |                     |                    | <b>5.0</b>  | <b>\$105</b> | <b>\$89</b>  |       |                           |
| 1 Introduction to HVAC Design   | Essentials Level I  | Design             | 1.5         | \$50         | \$42         | I-P   | HVAC Design and Operation |
| 2 The Design Process  | Essentials Level I  | Design             | 2.5         | \$50         | \$42         | I-P   | HVAC Design and Operation |
| 3 HVAC System Selection Issues  | Essentials Level I  | Design             | 1.0         | \$50         | \$42         | I-P   | HVAC Design and Operation |
| <b>Sustainability Course Package</b>                                  |                     |                    | <b>25.5</b> | <b>\$210</b> | <b>\$175</b> |       |                           |
| 1 The Basics of Sustainable Design                                    | Essential Level I   | Design             | 4.0         | \$50         | \$42         | I-P   | Advanced Technologies     |
| 2 Energy Conservation   | Essentials Level II | Energy Efficiency  | 8.5         | \$50         | \$42         | I-P   | Advanced Technologies     |
| 3 LEED Guidance   | Intermediate        | Green Buildings    | 4.0         | \$50         | \$42         | I-P   | Advanced Technologies     |
| 4 Indoor Environmental Quality  | Intermediate        | Indoor Air Quality | 4.0         | \$50         | \$42         | I-P   | Advanced Technologies     |
| 5 Ventilation and IAQ   | Essentials Level II | Indoor Air Quality | 3.0         | \$50         | \$42         | I-P   | Advanced Technologies     |
| 6 AEDG Small Office Buildings Lighting                                | Intermediate        | Lighting           | 1.0         | \$50         | \$42         | I-P   | Advanced Technologies     |
| 7 AEDG Small Retail Buildings Design Strategies and Recommendations   | Intermediate        | Design             | 1.0         | \$50         | \$42         | I-P   | Advanced Technologies     |
| <b>Loads and Modeling Course Package</b>                              |                     |                    | <b>3.5</b>  | <b>\$70</b>  | <b>\$59</b>  |       |                           |
| 1 Building Information Modeling                                       | Professional        | Design             | 2.0         | \$50         | \$42         | Dual  | HVAC Design and Operation |
| 2 Load Calculations   | Essential Levels II | Load Calculations  | 1.5         | \$50         | \$42         | I-P   | HVAC Design and Operation |
| <b>Fundamentals: HVAC Systems Course Package</b>                      |                     |                    | <b>19.5</b> | <b>\$270</b> | <b>\$227</b> |       |                           |
| 1 Introduction to HVAC Design   | Essentials Level I  | Design             | 1.5         | \$50         | \$42         | I-P   | Fundamentals              |
| 2 Introduction to HVAC Systems  | Essentials Level I  | Design             | 3.5         | \$50         | \$42         | I-P   | Fundamentals              |
| 3 Occupant Comfort and Health   | Essentials Level II | Indoor Air Quality | 1.5         | \$50         | \$42         | I-P   | Fundamentals              |
| 4 Load Calculations   | Essentials Level II | Load Calculations  | 1.5         | \$50         | \$42         | I-P   | Fundamentals              |
| 5 HVAC&R Controls   | Essentials I        | Controls           | 1.5         | \$50         | \$42         | I-P   | Fundamentals              |
| 6 Humidity Control Design: Basic Principles, Loads and Equipment      | Professional        | Design             | 3.0         | \$50         | \$42         | Dual  | Fundamentals              |
| 7 Ventilation and IAQ   | Essentials Level II | Indoor Air Quality | 3.0         | \$50         | \$42         | I-P   | Fundamentals              |
| 8 Thermal Comfort   | Essentials Level II | Indoor Air Quality | 2.0         | \$50         | \$42         | I-P   | Fundamentals              |
| 9 Ethics for the Built Environment Professional Engineer              | Intermediate        | Ethics             | 2.0         | \$50         | \$42         | Dual  | Fundamentals              |
| <b>Components and Equipment Course Package</b>                        |                     |                    | <b>11.5</b> | <b>\$180</b> | <b>\$152</b> |       |                           |
| 1 Air-Conditioning System Components: Heat Transfer Equipment         | Essentials Level I  | Design             | 1.0         | \$50         | \$42         | I-P   | Fundamentals              |

|   |  |                     |                                   |             |              |              |     |                 |
|---|--|---------------------|-----------------------------------|-------------|--------------|--------------|-----|-----------------|
| 2 | Air-Conditioning System Components: Pumps, Valves, Piping and Ductwork | Essentials Level I  | Design                            | 1.5         | \$50         | \$42         | I-P | Fundamentals    |
| 3 | Building Control   | Essential Level II  | Controls                          | 2.5         | \$50         | \$42         | I-P | Fundamentals    |
| 4 | Introduction to Zones  | Essentials Level II | Design                            | 1.5         | \$50         | \$42         | I-P | Fundamentals    |
| 5 | Single Zone Air Handlers and Unitary Equipment                         | Essentials Level II | Design                            | 3.0         | \$50         | \$42         | I-P | Fundamentals    |
| 6 | Multiple Zone Air Systems  | Essentials Level II | Design                            | 2.0         | \$50         | \$42         | I-P | Fundamentals    |
|   | <b>System Essentials Course Package</b>                                |                     |                                   | <b>8.0</b>  | <b>\$140</b> | <b>\$118</b> |     |                 |
| 1 | Central Plants   | Essentials Level II | Central Plants                    | 2.0         | \$50         | \$42         | I-P | HVAC Systems    |
| 2 | Air-and-Water Systems  | Essential Level I   | Design                            | 2.0         | \$50         | \$42         | I-P | HVAC Systems    |
| 3 | Controls   | Essentials Level I  | Controls                          | 2.0         | \$50         | \$42         | I-P | HVAC Systems    |
| 4 | Energy Conservation  | Essentials Level I  | Energy Efficiency                 | 2.0         | \$50         | \$42         | I-P | HVAC Systems    |
|   | <b>Air Systems Course Package</b>                                      |                     |                                   | <b>2.5</b>  | <b>\$105</b> | <b>\$89</b>  |     |                 |
| 1 | Introduction to All-Air Systems  | Essentials Level I  | Design                            | 0.5         | \$50         | \$42         | I-P | HVAC Systems    |
| 2 | Dual-Duct and Multizone All-Air Systems                                | Essentials Level I  | Design                            | 1.5         | \$50         | \$42         | I-P | HVAC Systems    |
| 3 | Simple Rooftop All-Air Systems   | Essentials Level I  | Design                            | 0.5         | \$50         | \$42         | I-P | HVAC Systems    |
|   | <b>Hydronic Systems Course Package</b>                                 |                     |                                   | <b>10.5</b> | <b>\$140</b> | <b>\$118</b> |     |                 |
| 1 | All-Water Systems  | Essentials Level I  | Design                            | 3.0         | \$50         | \$42         | I-P | HVAC Systems    |
| 2 | Hydronic Systems   | Essentials Level II | Hydronics                         | 2.5         | \$50         | \$42         | I-P | HVAC Systems    |
| 3 | Hydronic System Architecture   | Essentials Level II | Hydronics                         | 3.0         | \$50         | \$42         | I-P | HVAC Systems    |
| 4 | Controls   | Essentials Level I  | Controls                          | 2.0         | \$50         | \$42         | I-P | HVAC Systems    |
|   | <b>Special Systems Course Package</b>                                  |                     |                                   | <b>7.0</b>  | <b>\$70</b>  | <b>\$59</b>  |     |                 |
| 1 | Special HVAC Systems   | Essentials Level II | Design                            | 3.0         | \$50         | \$42         | I-P | HVAC Systems    |
| 2 | Special Applications   | Essentials Level I  | Controls                          | 4.0         | \$50         | \$42         | I-P | HVAC Systems    |
|   | <b>HVAC Control Systems- I-P Course Package</b>                        |                     |                                   | <b>36.5</b> | <b>\$270</b> | <b>\$227</b> |     |                 |
| 1 | Introduction to HVAC Control Systems                                   | Essentials Levels I | Controls                          | 4.5         | \$50         | \$42         | I-P | Control Systems |
| 2 | Basics of Electricity  | Essentials Level I  | Controls                          | 4.5         | \$50         | \$42         | I-P | Control Systems |
| 3 | Control Valves and Dampers   | Essentials Level I  | Controls                          | 6.5         | \$50         | \$42         | I-P | Control Systems |
| 4 | Sensors and Auxiliary Devices  | Essentials Level I  | Controls                          | 7.5         | \$50         | \$42         | I-P | Control Systems |
| 5 | Self- and System-Powered Controls                                      | Essentials Level II | Controls                          | 1.5         | \$50         | \$42         | I-P | Control Systems |
| 6 | Electric Controls  | Essentials Level II | Controls                          | 2.0         | \$50         | \$42         | I-P | Control Systems |
| 7 | Pneumatic Controls   | Essentials Level I  | Controls                          | 3.0         | \$50         | \$42         | I-P | Control Systems |
| 8 | Control Diagrams and Sequences   | Essentials Level II | Controls                          | 3.5         | \$50         | \$42         | I-P | Control Systems |
| 9 | DDC Networks and Protocol  | Essentials Level I  | Controls                          | 3.5         | \$50         | \$42         | I-P | Control Systems |
|   | <b>HVAC Control Systems - SI Course Package</b>                        |                     |                                   | <b>23.5</b> | <b>\$175</b> | <b>\$147</b> |     |                 |
| 1 | Basics of Electricity  | Essentials Level I  | Controls                          | 4.5         | \$50         | \$42         | SI  | Control Systems |
| 2 | Control Valves and Dampers   | Essentials Level I  | Controls                          | 6.5         | \$50         | \$42         | SI  | Control Systems |
| 3 | Control Diagrams and Sequences   | Essentials Level II | Controls                          | 3.5         | \$50         | \$42         | SI  | Control Systems |
| 4 | DDC Introduction to Hardware and Software                              | Essentials Level I  | Controls                          | 4.5         | \$50         | \$42         | SI  | Control Systems |
| 5 | DDC Specification, Installation and Commissioning                      | Essentials Level I  | Controls                          | 4.5         | \$50         | \$42         | SI  | Control Systems |
|   | <b>DDC Controls -I-P Course Package</b>                                |                     |                                   | <b>8.0</b>  | <b>\$70</b>  | <b>\$59</b>  |     |                 |
| 1 | DDC Networks and Protocols   | Essentials Level I  | Controls                          | 3.5         | \$50         | \$42         | I-P | Control Systems |
| 2 | DDC Specification, Installation and Commissioning                      | Essentials I        | Controls                          | 4.5         | \$50         | \$42         | I-P | Control Systems |
|   | <b>DDC Controls - SI Course Package</b>                                |                     |                                   | <b>9.0</b>  | <b>\$70</b>  | <b>\$59</b>  |     |                 |
| 1 | DDC Introduction to Hardware and Software                              | Essentials Level I  | Controls                          | 4.5         | \$50         | \$42         | SI  | Control Systems |
| 2 | DDC Specification, Installation and Commissioning                      | Essentials Level I  | Controls                          | 4.5         | \$50         | \$42         | SI  | Control Systems |
|   | <b>AC and Refrigeration Principles Course Package</b>                  |                     |                                   | <b>6.0</b>  | <b>\$140</b> | <b>\$118</b> |     |                 |
| 1 | Psychrometrics   | Essentials Level II | Thermodynamics and Psychrometrics | 1.0         | \$50         | \$42         | I-P | Fundamentals    |
| 2 | Refrigeration System Parameters and Performance                        | Essentials Level II | Refrigeration                     | 0.5         | \$50         | \$42         | I-P | Fundamentals    |
| 3 | Refrigerants   | Essentials Level II | Thermodynamics and Psychrometrics | 2.0         | \$50         | \$42         | I-P | Fundamentals    |
| 4 | Compressors  | Essentials Level II | Refrigeration                     | 2.5         | \$50         | \$42         | I-P | Fundamentals    |
|   | <b>Electrical System Design Course Package</b>                         |                     |                                   | <b>6.6</b>  | <b>\$175</b> | <b>\$147</b> |     |                 |
| 1 | Power Distribution Applications  | Essentials Level I  | Design                            | 1.0         | \$50         | \$42         | I-P | HVAC Systems    |
| 2 | Design for Building Electrical Systems                                 | Essentials Level I  | Design                            | 1.5         | \$50         | \$42         | I-P | HVAC Systems    |

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| 3 | Building Electrical Power Components  | Essentials Level I | Design                    | 1.8         | \$50         | \$42         | I-P  | HVAC Systems          |
| 4 | The Electric Utility  | Essentials Level I | Operation and Maintenance | 1.3         | \$50         | \$42         | I-P  | HVAC Systems          |
| 5 | Direct Current Electrical Systems   | Essentials Level I | Design                    | 1.0         | \$50         | \$42         | I-P  | HVAC Systems          |
|   | <b>Standard 62.1: Ventilation for Acceptable Indoor Air Quality Course Package</b>      |                    |                           | <b>10.1</b> | <b>\$175</b> | <b>\$147</b> |      |                       |
| 1 | Standard 62.1-2007: Natural Ventilation and Exhaust                                     | Intermediate       | Indoor Air Quality        | 1.5         | \$50         | \$42         | I-P  | Standards             |
| 2 | Standard 62.1-2013: Natural Ventilation Procedure                                       | Professional       | Indoor Air Quality        | 1.5         | \$50         | \$42         | I-P  | Standards             |
| 3 | Standard 62.1-2010 - Ventilation Rate Procedure   | Intermediate       | Indoor Air Quality        | 3.0         | \$50         | \$42         | Dual | Standards             |
| 4 | Standard 62.1-2007: Recirculating and Treating Indoor Air                               | Intermediate       | Indoor Air Quality        | 1.7         | \$50         | \$42         | I-P  | Standards             |
| 5 | Standard 62.1-2007: Moisture and Mold Control   | Intermediate       | Moisture and Humidity     | 2.4         | \$50         | \$42         | I-P  | Standards             |
|   | <b>Standard 90.1: Energy Standard for Buildings Course Package</b>                      |                    |                           | <b>9.8</b>  | <b>\$140</b> | <b>\$118</b> |      |                       |
| 1 | Standard 90.1-2004: Lighting - General and Mandatory Provisions                         | Intermediate       | Energy Efficiency         | 2.2         | \$50         | \$42         | I-P  | Standards             |
| 2 | Standard 90.1-2004: Energy Cost Budget Method   | Intermediate       | Energy Efficiency         | 1.9         | \$50         | \$42         | I-P  | Standards             |
| 3 | Using Standard 90.1-2010 to Meet LEED Requirements                                      | Professional       | LEED Compliance           | 3.0         | \$50         | \$42         | I-P  | Standards             |
| 4 | Architects: Overview of Mechanical Systems  | Essentials II      | Energy Efficiency         | 2.7         | \$50         | \$42         | I-P  | Standards             |
|   | <b>Standard 189.1-2011 - High Performing Green Buildings Course Package</b>             |                    |                           | <b>7.5</b>  | <b>\$105</b> | <b>\$89</b>  |      |                       |
| 1 | Standard 189.1-2011 - Water, Sites, and Materials                                       | Intermediate       | Green Buildings           | 3.5         | \$50         | \$42         | Dual | Standards             |
| 2 | Standard 189.1-2011 for High-Performance Green Buildings – Energy Efficiency            | Professional       | Green Buildings           | 2.0         | \$50         | \$42         | Dual | Standards             |
| 3 | Standard 189.1-2011 for High- Performance Green Buildings: Indoor Environmental Quality | Professional       | LEED Compliance           | 2.0         | \$50         | \$42         | Dual | Standards             |
|   | <b>Data Center Design Course Package</b>  |                    |                           | <b>5.5</b>  | <b>\$140</b> | <b>\$118</b> |      |                       |
| 1 | Computer Cooling Equipment  | Advanced           | Data Centers              | 1.0         | \$50         | \$42         | Dual | Advanced Technologies |
| 2 | Airflow, Equipment Placement and Heat Release   | Advanced           | Data Centers              | 1.0         | \$50         | \$42         | Dual | Advanced Technologies |
| 3 | Liquid Cooling and Facility Cooling Systems   | Advanced           | Data Centers              | 1.5         | \$50         | \$42         | Dual | Advanced Technologies |
| 4 | Building Facility and Chilled-Water Systems   | Advanced           | Data Centers              | 2.0         | \$50         | \$42         | Dual | Advanced Technologies |
|   | <b>Refrigerants Course Package</b>  |                    |                           | <b>4.5</b>  | <b>\$105</b> | <b>\$89</b>  | Dual |                       |
| 1 | Introduction to Refrigerants  | Essentials Level 1 | Refrigerants              | 1.5         | \$50         | \$42         |      | Fundamentals          |
| 2 | Refrigerant Selection   | Essentials Level 1 | Refrigerants              | 1.5         | \$50         | \$42         |      | Fundamentals          |
| 3 | Refrigerant Management  | Essentials Level 1 | Refrigerants              | 1.5         | \$50         | \$42         |      | Fundamentals          |
| 1 | HVAC Design and Operation Library   |                    |                           | 18.5        | \$224        | \$189        |      | I-P & SI              |
| 2 | Advanced Technologies Library   |                    |                           | 31.0        | \$252        | \$235        |      | I-P & SI              |
| 3 | Fundamentals Library  |                    |                           | 37.0        | \$472        | \$398        |      | I-P & SI              |
| 4 | HVAC Systems  |                    |                           | 37.1        | \$504        | \$425        |      | I-P                   |
| 5 | Control Systems   |                    |                           | 77.0        | \$468        | \$394        |      | I-P & SI              |
| 6 | Standards   |                    |                           | 27.4        | \$336        | \$284        |      | IP & SI               |

### Contact Information

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