ASHRAE Philadelphia Chapter

September 2018
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COSTS

Fees are based on online reservations and prepayment.

Philadelphia Chapter Members:
$30

ASHRAE Society Members - Non-Chapter Members:
$40

ASHRAE Life Members:
No Charge

Non- ASHRAE Member:
$40

YEA Member (35 & under):
$25

Students:
No Charge

Government:
Energy and Policy
No Charge



QUAKER CITY CLIMATE

Thursday, September 13, 2018
Lunchtime Session

Mike Newman
presents
"PECO Energy Programs"

and

Ronald Jarnagin
Pacific Northwest National Laboratory
ASHRAE Past President and Distinguished Lecturer
presents
"ASHRAE Standard 90.1 - Past, Present and Future"
**1-hr PDH, Continuing Education Credits – Including New York, AIA, & GBCI*
(See page 3 and page 4 for more information.)

It's Membership Promotion Night!
Bring a colleague and your lunch could be free.
See page 11 for details!
It's also a Student Night!
https://www.ashrae.org/communities/student-zone
It's also a Government Affairs Event!
https://www.ashrae.org/about/government-affairs

Click here to Register

12:00 PM - Reception Begins
12:15 PM - PECO Presentation
12:50 PM - Standard 90.1 Presentation
2:00PM - Event Concludes

LOCATION
World Café Live
3025 Walnut Street
Philadelphia, PA 19104
215-222-1400
www.worldcafelive.com

2018-2019

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Mike Radio, PE, CEM, BEMP, LEED AP

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Publicity
Mike Radio

Grassroot Government Activities
Anthony Scaccia

Special Events
Tim Reinking

Honors and Awards Committee
Jeff Crozier

President's Message

I hope everyone had a great summer and are ready for another year of ASHRAE Philadelphia Chapter events. I would like to thank past chapter president, Jeff Crozier, for his commitment in leading us through another fun year. This year's program schedule looks to build on the framework previously developed by last year's Board of Governors.

In an effort to expand our attendance reach, we are focusing our meeting sessions on integrated topics with the potential for attracting multi-discipline professionals. Joint meetings have been coordinated with SMCA, AIA, and AEE. Local facility managers, engineers and code officials will have an increased presence, as they will presenting their city-defining projects, concepts and ideas. Dispersing monthly meeting venues throughout the city will help refresh our chapter sessions. We have exciting events planned at World Café Live, the Mummers Museum, Xfinity Live, and the prestigious Union League. I would like to highlight that a few of our meetings this year are planned to be lunch meetings (12:00 pm – 2:00 pm) in lieu of dinner meetings. This will allow our guests a chance to attend our sessions while maintaining their work/life balance. The full calendar of events is available in this newsletter.

We have expanded our social media presence and recently added an ASHRAE Philadelphia Chapter LinkedIn page. This platform will be used for meeting announcements, topic discussion, and general updates regarding our ASHRAE Chapter's activity. I encourage you all to follow us!

The ASHRAE Philadelphia Chapter recently attended the Chapter Regional Conference (CRC) hosted in Pittsburgh, PA. I would like to thank our CRC Committee Chair, Gary Debes, for presenting our chapter summary report to the regional officers. Gary also led the chapter's Research Promotion Committee and was successful in exceeding our Chapter's target goal for funding research, the backbone of ASHRAE.

Our September meeting will be a lunch meeting at World Café Live in Center City starting at 12:00 pm. Pennsylvania is adopting a new energy conservation code effective October 1, 2018. The 2015 IECC will be the new building efficiency standard statewide except for in the city of Philadelphia, which is adopting the 2018 IECC Standard. Distinguished lecturer Ronald Jarnagin will be discussing "ASHRAE 90.1 – Past, Present and Future", including updates included in ASHRAE 90.1-2016 required by IECC 2018. PECO will also be giving a presentation highlighting financial incentives for several energy efficiency upgrades.

I am really looking forward to seeing you all at our September Chapter Meeting and I am excited for another year full of ASHRAE events!

Mike Radio, PE
Philadelphia Chapter President
c021@ashrae.net

The New 2018-2019 Directory is Available!

The latest edition of the Directory of Associations, Consulting Firms, and Manufacturers' Representatives in the Philadelphia Area is now available. It sells for $23 each.

Send your check to ASHRAE, 994 Old Eagle School Road, Suite 1019, Wayne, PA 19087. If you prefer to pay by credit card, please call Hope at 610-971-2169 or email her at hope@mmco1.com.

Thursday, September 13, 2018
Lunchtime Session Presentation

Topic: ASHRAE Standard 90.1- Past, Present and Future

1-hr PDH, Continuing Education Credits – Including New York, AIA, & GBCI

Standard 90.1 is ASHRAE's flagship standard focused on energy efficiency in commercial buildings. The standard is cited in U.S. federal energy legislation and forms the basis for many of the state and local building codes. This presentation will focus on the evolution of Standard 90.1 from its inception in 1975 through the current 2016 version. **This presentation will address the design changes as Philadelphia adopts newer building codes. ASHRAE 90.1- version 2007 vs. 2016**.

Speaker: **Ronald Jarnagin**, Pacific Northwest National Laboratory

Mr. Jarnagin and is a recognized as a Distinguished Lecturer in ASHRAE and has been involved in energy-related research and development activities for over 35 years. His background is diverse, including work in the areas of fluid flow, power plants, automotive and transportation systems, HVAC systems, energy use in buildings, smart grid activities and energy standards development. Mr. Jarnagin has served on numerous utility, government and business advisory boards, lending his expertise to solving their respective energy problems. He served on the faculty in the Department of Mechanical Engineering at the University of Florida for 10 years, and has been with Pacific Northwest National Laboratory for the past 20 years. Mr. Jarnagin is active in standards development activities, both nationally and internationally. He chaired ASHRAE's Standard 90.1 committee for 4 years, providing the leadership to successfully complete a comprehensive revision to that standard in 1999. In addition, he chaired the International Standards Organization (ISO) TC 205, Building Environment Design. He chaired a multi-disciplinary team made up of members of four organizations that produced the first Advanced Energy Design Guide (AEDG) for Small Offices which won 3 national awards from sustainability organizations in the U.S. In addition, he served as chair or vice chair of 3 additional AEDGs. Mr. Jarnagin is active in ASHRAE, having served on the Board of Directors as a Director-at-Large, and served as an ASHRAE Vice President as well. He also served as the Chairman of ASHRAE's Technology Council, which has stewardship for all of ASHRAE's research, standards, and technical committees. Mr. Jarnagin chaired the Sustainability Roadmap Ad Hoc committee that developed ASHRAE's Sustainability Roadmap and the Sustainability Oversight Committee charged with managing the implementation. He chaired ASHRAE's Vision 2020 Committee and served on the Strategies for a Global Environment Committee in addition to leading the ASHRAE Building Energy Labeling Committee. He is a member of the ASHRAE Headquarters Renovation Committee that undertook a multi-million dollar renovation of the headquarters building in Atlanta with the goal of achieving a LEED-EB Gold rating as well as making the headquarters a Living Laboratory showcase that can be utilized by the members. Currently Mr. Jarnagin was part of a U.S. delegation to China, assisting the Chinese Ministry of Science and Technology in planning for a Hydrogen Economy in China. As one of the activities in support of the Chinese effort, Mr. Jarnagin participated in the design of an innovative, renewable energy based hydrogen refueling station that was constructed to serve the 2008 Beijing Olympics. Mr. Jarnagin has also worked with the Chinese Association of Refrigeration representing ASHRAE to help in the development of HVAC product standards for China. During his career at PNNL, Mr. Jarnagin has worked extensively in the Building Energy Standards and Commercial Equipment Standards programs, and managed the Building Energy Standards Program for a number of years. He has served as a Technical Group Leader, Business Team Leader, and has lead several teams preparing bids for large government solicitations. Mr. Jarnagin has received the Distinguished Service Award from ASHRAE, was recognized as the 2004 NSPE Engineer of the Year in Tri-Cities, WA, received 2003 AEE Special Recognition award for service to industry and 1999 Presidential Award from IESNA. He holds graduate degrees in Mechanical Engineering from the University of Florida and Accounting from Louisiana State University. He is also a decorated U.S. Navy veteran of Vietnam having served with the river patrol forces there.

JAMAL C. MORRIS FOUNDATION

Jamal C. Morris, a Mechanical Engineer who graduated from Drexel University's College of Engineering in 2011, was tragically killed by a hit and run driver while riding his bike on April 18, 2016.

In honor of Jamal, the foundation's mission is to provide scholarships to promising low-income African-American students to attend Drexel University's College of Engineering.

Please Join Us for a

MINI GOLF EVENT!!

When: September 22, 2018

Where: Daskalakis Athletic Center (DAC), Drexel University

Cost: $15 per person, $50 per foursome

For more information or to register, sponsor, or donate:
https://www.jamalmorrisminigolf.com

Sponsored by:

BLACKNEY HAYES ARCHITECTS 30 years

DREXEL UNIVERSITY College of Engineering

Thursday, September 13, 2018
Lunchtime Session Presentation
"PECO Energy Programs"

PECO is offering new, increased financial incentives for several energy efficiency upgrades, effective immediately. These higher incentive levels make improving energy efficiency even more affordable and will help you to implement more upgrades. High-efficiency equipment can expand profit margins while offering improvements in customer retention, worker comfort, facility attractiveness and performance. A representative from PECO Smart Ideas will identify premium motors and VFD applications that are eligible for rebates. The session will review how to measure energy savings achieved through VFDs and will provide advice for selling premium motor upgrades.

PHILADELPHIA CHAPTER PROGRAMS CALENDAR 2018-2019

Date	Time	Venue	Session Topic	Theme
Thursday, September 13, 2018	*Lunch Meeting 12pm - 2pm	World Café Live	PECO Energy Programs & ASHRAE 90.1 2007 vs.2016	Membership Promotion Student "Night" Government Affairs Event
Thursday, October 04, 2018	5pm - 8:30pm	Warwick Hotel	SMCA (Joint) Meeting Topic: Dampers	Student Night SMCA Engineers Night
Thursday, November 08, 2018	5pm - 8pm	Valley Forge Casino	"Sustainability"	YEA Event
Thursday, December 13, 2018	*Breakfast Meeting 7am - 8:30am	The Union League	"Health Care"	Research Promotion
Wednesday, January 16, 2019	5pm - 10pm	Wells Fargo Center	Social Event - Hockey Flyer vs Bruins	Membership Promotion YEA Event
Thursday, February 21, 2019	5pm - 8pm	Mummers Museum	"Codes / Standards"	
Thursday, March 14, 2019		TBD	"Legal / Ethics"	ASHRAE History Night
Thursday, April 11, 2019		TBD	"Microgrids"	
Thursday, May 09, 2019		TBD	"Diversity"	Employer Recognition Past Presidents Research Promotion
Monday, May 13, 2019	11am - 7pm	DuPont CC	Annual Golf Outing	Fun and Relaxation

Program calendar is tentative and subject to change. Please refer to ASHRAE Philadelphia Website for up to date information. Advance registration and pre-payment are required before the meetings.

We need your attendance!

If we are below our guaranteed level for attendees at our meetings, our treasury could be negatively effected. Our programs are designed around the membership's input and we all need to support these meetings to maintain a strong/informed association. We hope to see you at our next meeting. Please come out and support our Chapter!

Engineers' Night

SMCA
Sheet Metal Contractors Association

Thursday, October 4

The Warwick Rittenhouse Square
220 S. 17th Street, Philadelphia, PA 19103
Cocktails/Vendor Display: 5 p.m.
Program: 6:30 p.m.— 8:30 p.m.

Dampers: Fire, Smoke & Combination; Specification, Installation and Maintenance



In a burning building,

——————————>

This is what you need to fear most



<u>This</u> can help save lives. Join us and find out how.



In 2011, the National Fire Protection Association (NFPA) reported that smoke inhalation accounted for twice the number of fatalities as burns in fire incidents. Stopping, or slowing the movement of smoke in these situations may be the key to saving lives. Join us to see how smoke and fire dampers operate.

SMACNA's Executive Director of Technical Resources, Mark Terzigni will cover fire codes and how they affect damper inspections. Retired ICB/TABB executive Chuck Holt will then lead an active display of the different kinds of fire dampers, how they are designed to operate, and some of the real-life scenarios that could potentially hinder the proper operation of a fire damper.

Visit <u>www.smca.org</u> to register by September 27th.

Note from the Incoming CTT Committee:

We hope to increase interest and readership in regards to the monthly CTTC articles within this newsletter. With this in mind, we would like to introduce a slightly different format. This month features two articles on opposite sides of the "**Chilled Beams vs VAV**" debate. These two articles were published about 5 years ago, but from our experience interacting with building owners, this debate is still very much alive. We selected these articles to open the debate because they are opposing viewpoints regarding the same case study. If you know of any newer articles or white papers pertaining to this debate, please share them with us! Thanks and enjoy!

Brian N. Stehman
CTTC Refrigeration Subcommittee Chairman
bstehman@tristatehvac.com

Henry Hoffman, PE
CTTC Chairman
c021cttc@ashrae.net

VAV Reheat Versus Active Chilled Beams & DOAS

By Jeff Stein, PE and Steven T. Taylor, PE

From the May 2013 issue of ASHRAE Journal

Several recent articles claim that dedicated outdoor air systems (DOAS) plus active chilled beam (ACB) systems are superior to variable air volume reheat (VAVR) systems on energy efficiency, first cost, air quality, etc. The ASHRAE Golden Gate Chapter recently decided to hold a head-to-head competition to put these claims to the test.

Three mechanical engineering firms with offices in the Bay Area provided a Design Development (DD) level design for a real office building currently in design, the UC Davis Medical Center Graduate Studies Building (GSB) in Davis, Calif. One firm designed an ACB+DOAS system, another firm designed a VAVR system, and the third designed a hybrid combination of these two systems. A fourth engineering firm simulated each of the three designs using the EnergyPlus energy simulation program. Finally, a major mechanical contractor provided a detailed HVAC construction cost estimate for each design.

The VAV reheat system had the lowest first costs and the lowest energy costs of the three systems. The analysis showed that many of the supposed advantages of ACB+DOAS relative to VAVR, such as improved indoor air quality and a lower floor/floor height, also turned out to be largely overstated. Note that the results of this analysis are only strictly applicable to these three designs and this building and climate, but the conclusions also may apply more broadly.

(click here to read the entire article)

WHITE PAPER – A Real-World Analysis of Chilled Beams vs. VAV

A review of the ASHRAE Journal article "VAV Reheat versus Active Chilled Beams with DOAS"

Published July 26, 2013 by TROX (individual authors unknown)

The May 2013 issue of the ASHRAE Journal features an article titled VAV Reheat versus Active Chilled Beams & DOAS which compares a "streamlined" VAV system to inefficiently designed active beam/DOAS system. The subject of the article is a classroom/office building at the University of California at Davis. The facility is a three story building with 56,500 ft2 of conditioned space. It has a very low occupant density (275 ft2 per person) and representative space sensible cooling loads (averaging 19.5 Btu/h-ft2). The article compares first costs and energy usage while assessing other claimed benefits of ACB systems.

The ACB system as described in the article has a number of shortcomings that lead to many of the authors' erroneous conclusions, which include:

- A DOAS air handler without any energy recovery continuously delivers 100% outside air.
- Primary air is delivered at 63˚F with an insufficiently depressed (54˚F) dew point temperature.

(click here to read the entire article)

ASHRAE's Fundamentals of HVAC Design and Operations

September 10 - 12, 2018
8:00am - 4:30pm (Daily)
OMNI Shoreham Hotel, Washington, DC
Tuition: $1,000

NOTE: Participants will be offered breakfast, morning refreshment break, lunch and afternoon refreshment break daily.

CLICK HERE TO REGISTER

APPA is partnering with ASHRAE to offer training that provides participants with instruction that accelerates their transformation into effective members of a design, construction, operations or facilities maintenance team. Developed by industry-leading professionals selected by ASHRAE, the training provides attendees with the fundamentals and technical aspects of HVAC design. Attendees will gain practical skills and knowledge to design and maintain HVAC systems that can be put to immediate use.

Who Should Attend

- Facilities managers responsible for managing building operations staff
- Facilities managers involved in new construction or major renovation projects
- Technicians or front line supervisors who would like to gain design knowledge
- Architects who want to understand fundamental HVAC system design

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How Your Institution Will Benefit

The training helps attendees understand:

- How to improve overall building performance
- The technologies that lead to improved building performance
- The economics of sustainable buildings and the roles of the designer and facilities manager
- The basic skills needed to design and/or operate high-performance buildings
- The skill set that will be required by designers and operators of the future
- Techniques to interact effectively with all design partners (architects, owners, other engineering disciplines) in an integrated design team

Faculty:

Don Brandt, CEM, Life Member ASHRAE, BEAP

Donald L. Brandt, CEM, Life Member ASHRAE, BEAP, worked for Trane the entire 39 years of his HVAC industry career. He held the positions of sales engineer, sales manager, trainer, facility manager and controls project manager. During his tenure, he worked in the sales offices in Wilkes-Barre-Allentown, PA, and Phoenix, AZ. Don has been active in ASHRAE, serving at the Chapter, Regional and Society Levels, including DRC for Region X from 2002-2005, Standards Committee from 2005-2009 and Nominating Committee from 2010-2016. He received the ASHRAE Distinguished Service Award in 2005 and the Exceptional Service Award in 2015. Don is an ASHRAE Learning Institute instructor for the “HVAC Design-Essentials” and “HVAC Design-Applications” courses, both in the US and internationally. He is also the author of the new “Fundamentals of Psychrometrics” self-directed learning course. He is a graduate of Pennsylvania State University with a bachelor of science degree in electrical engineering.

Joel Primeau, P.Eng., ASHRAE Member, HBDP, LEED AP

Joel Primeau is a sales engineer with over 27 years of HVAC experience. He has lead and assisted teams of engineers and technicians in the design and construction of high-performance, sustainable facilities. Joel’s experience spans a wide range of engineering design and construction projects. His expertise is in the design of high-efficiency HVAC systems that enhance indoor air quality and comfort. Joel frequently trains engineers, architects and facility managers on the design process, central heating and chilling plant optimization, high-performance HVAC systems, and heat recovery applications. Joel is a Licensed Professional Engineer, ASHRAE Certified High-Performance Building Design Professional (HBDP), and a LEED Accredited Professional. He earned a BEng in Mechanical Engineering from the Royal Military College in Kingston, Canada. After a brief career as an army engineer, Joel has since worked in the HVAC industry in consulting, facilities management and technical sales.

PECO has new, Increased Financial Incentives for Commercial and Industrial Projects

PECO is offering new, increased financial incentives for several energy efficiency upgrades, effective immediately. These higher incentive levels make improving energy efficiency even more affordable for your customers and will help you to close more projects.

Increased incentives are available on a variety of energy efficiency upgrades, including interior and exterior lamps and fixtures, as well as variable-frequency and variable speed drives. In addition to increasing incentives for more common, existing lighting measures, there are new opportunities for savings with 3-foot and 8-foot LED replacement lamps. As the price of LED fixtures have come down significantly, these higher incentive levels essentially offset the cost of these lighting upgrades.

Enhanced incentives are also available for variable frequency drives (VFDs) on heating, ventilation, and air conditioning (HVAC) systems. Below are just a few examples:

Measure	*OLD* Incentive	*NEW* Incentive
4' LED Linear Lamps	$4/Lamp	**$6/Lamp**
LED Outdoor Floods	$10–$15/Fixture	**$15–$25/Fixture**
LED Troffers	$10–$20/Fixture	**$15–$25/Fixture**
HVAC VFDs	$25/HP	**$50/HP**
Pump VFDs	$25/HP	**$50/HP**

View all of the new incentives by visiting the PECO New Incentives site.

On Wednesday, May 2, PECO hosted a webinar to review all of the new incentives. A recording of the webinar, along with updated copies of the PECO Incentive Reference Sheets for C&I and Multifamily Solutions, can be found here.

In addition to new and increased incentives, PECO is also offering tiered incentives for projects required to meet minimum wattage thresholds. Projects that achieve a minimum 10% wattage reduction may qualify for approximately two-thirds of the measure incentive value. A recording of the webinar reviewing these lighting measures that did not previously meet the Minimum Watts Reduced thresholds is available here.

To discuss a project, call the PECO Smart Ideas team at 1-844-4BIZ-SAVE (1-844-424-9728) or email pecosmartideas@dnvgl.com.

Forum on Architecture + Design
October 3-5, 2018

Hosted by AIA Philadelphia

https://www.aiaphiladelphiaorg/forum-architecture-design

What is Forum on Architecture + Design?

The Forum on Architecture + Design is the newly rebranded educational and expo event that is replacing the previous Design on the Delaware conference. The Forum is focused on curating multidisciplinary educational content for designers, civic leaders, product manufacturers, technology providers, and real estate developers - all the industries that contribute to shaping our built environment.

The Forum will offer:

- over 30 accredited continuing education programs and tours,
- compelling keynote sessions featuring nationally/internationally recognized industry leaders,
- a three-day expo, and
- several opportunities to network and socialize with leaders in the building and design professions.

Now accepting program submissions!

To review program requirements and submit a program for the 2018 Forum on Architecture + Design, please click here.

Sponsorships are available!

Click here to download the 2018 Forum on Architecture + Design Sponsorship and Exhibit Opportunities Packet.

If you have any questions, please feel free to reach out to Member Services & Events Manager, Julianne Foley, at juli@aiaphila.org.



Click here for info!

2019 ASHRAE Winter Conference
& AHR Expo
Atlanta, GA | January 12–16, 2019

The Philadelphia Chapter
of the
American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.

994 Old Eagle School Road
Suite 1019
Wayne, PA 19087-1866
P 610-971-2169
F 610-971-4859

Visit
our web site at:

www.ashraephilly.org

Republication of material contained herein is expressly forbidden without official Chapter authorization. The Chapter does not speak or act for the Society. Any member with material to submit for inclusion in the *Climate* can send the information to:

Hope Silverman
P 610-971-2169
hope@mmco1.com

Material can include letters to the editor, member news, upcoming events, comments on chapter programs or issues, etc.

New Philadelphia Chapter Members

New Members:
Omar Al Darraji
Anil K. Bansal
Navil Christian
Jeremy Dayton
Ernest F. Eichenberg IV
Marcos Espinoza
Edward Mead Haye
Peter F. Hoey
Robert Kownurko
Robert J. Suda

New Affiliates:
Daniel Ross Brendlinger
Stephen John McGowan
Klosedo Muco

New Associates:
Tim A Yoder PE
Peter A. Altavilla III
Benjamin Brandon Caiola
Nicholas A Calcagni
Benjamin Hannas
Matthew Sholomskas
David Snyder
Brian N. Stehman

Membership Advancement

If you are currently an ASHRAE Associate Member, becoming a full Member is easier than you think! The following count toward the required **12 points** to advance to full membership status. You must update your ASHRAE online biography and send an email to membership@ashrae.org to advance.

Non-accredited degree = 4 points
Accredited degree = 6 points
PE = 4 points
Industry experience = 1 point/year

September Meeting - MEMBERSHIP PROMOTION SPECIAL !

Current Philadelphia ASHRAE Chapter members in good standing can receive their meeting ticket complimentary (paid for by the Philadelphia Chapter) by bringing with them a “new” ASHRAE member who signs up for membership at the registration desk.

Additionally, we would like to welcome the new Chapter members with their first Philadelphia Chapter meeting ticket free!

To take advantage of this offer when registering online, please use the coupon code "Membership" when registering for this event. Please make sure you register yourself and a guest when using this code.

ASHRAE – PHILADELPHIA CHAPTER

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND
AIR-CONDITIONING ENGINEERS, INC. PHILADELPHIA CHAPTER

BASIC HVAC SYSTEM DESIGN COURSE

This is a demanding one-year course that introduces students to the fundamentals of HVAC design. Classroom activities will include lectures and problem solving sessions, supplemented by home reading and study assignments.

2018-2019 Course Subjects Include:

Fundamentals and Psychrometrics

Load and Heat Transfer Fundamentals

Load Calculations

Pumps, Piping & Piping Systems

Basic Steam & Boilers

Fans, Air Distribution & Duct Design

Refrigeration

Controls & Instrumentation

Equipment Selection

The class is a great way to further, or even begin, a career in HVAC.

Classes will meet Tuesdays and Thursdays from 6:15 PM to 8:30 PM beginning in October and continuing until the middle of March. Classes will be held in Center City Philadelphia. Students are responsible for transportation and parking costs.

The Basic Class tuition is $1,200 ($1,000 for ASHRAE Members who have paid both their National and Philadelphia Chapter dues). Tuition includes all course materials.

Class size is limited to 30 students. To enroll, complete and submit the application including a **non-refundable** deposit of $200 payable to "Philadelphia Chapter ASHRAE". Balance due at first course session.

If you would like to enroll or receive further information, please contact:

Hope Silverman
Philadelphia Chapter ASHRAE
994 Old Eagle School Road, Suite 1019
Wayne, PA 19087-1866
Phone 610-971-2169
Fax 610-971-4859
E-mail: info@ashraephilly.org
Web site: www.ashraephilly.org

Philadelphia Chapter ASHRAE

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

Basic HVAC System Design Course Application
2018-2019

Personal Information

Name: _____
Last First Middle Initial

Home Address: _____
Street City State Zip

Phone No.: _____ Application Date: _____

Email: _____

Current or Most Recent Employment

Employer: _____ From: _____ To: _____ Total _____
Firm Name Date Date Years

Business Address: _____
Street City State Zip

Job Title: _____ Phone: _____ Fax: _____

Email: _____

Discipline: ____ Engineer ____ CAD/Designer ____ CAD/Drafting ____ Sales Rep ____ Trades ____ Administration

Learning Goals

Please describe what you hope to learn and take away from this class.

_____

_____

_____

Education

	School (Name & Location)	Years Attended	Major	Degree Or Diploma
High School				
College				
Other				

PLEASE SEE REVERSE SIDE FOR PAYMENT

PAYMENT

AMOUNT:

Members: _____ $200 Deposit _____ $800 Balance Due _____ $1,000 Total Fee
Members are those who have paid their ASHRAE National and Philadelphia Chapter Dues

Non-Members: _____ $200 Deposit _____ $1,000 Balance Due _____ $1,200 Total Fee

The balance due must be received by our office prior to the first evening of class.

PAYMENT BY CHECK: _____ (made payable to "Philadelphia Chapter ASHRAE")

PAYMENT BY CREDIT CARD: ____ VISA ____ Master Card ____ American Express

Total Amount to be Billed to Card: _____

Credit Card Number: _____

Expiration Date: _____

Name on Card (please print): _____

Billing Address for Card: _____

_____

_____

RETURN THIS FORM WITH PAYMENT TO:

Hope Silverman
Philadelphia Chapter ASHRAE
994 Old Eagle School Road
Suite 1019
Wayne, PA 19087-1866
Phone 610-971-2169
Fax 610-971-4859
info@ashraephilly.org

For Official Use Only

Date Received: _____ Tuition: _____ Deposit: _____ Check No.: _____ Balance _____