



Energy Management Institute

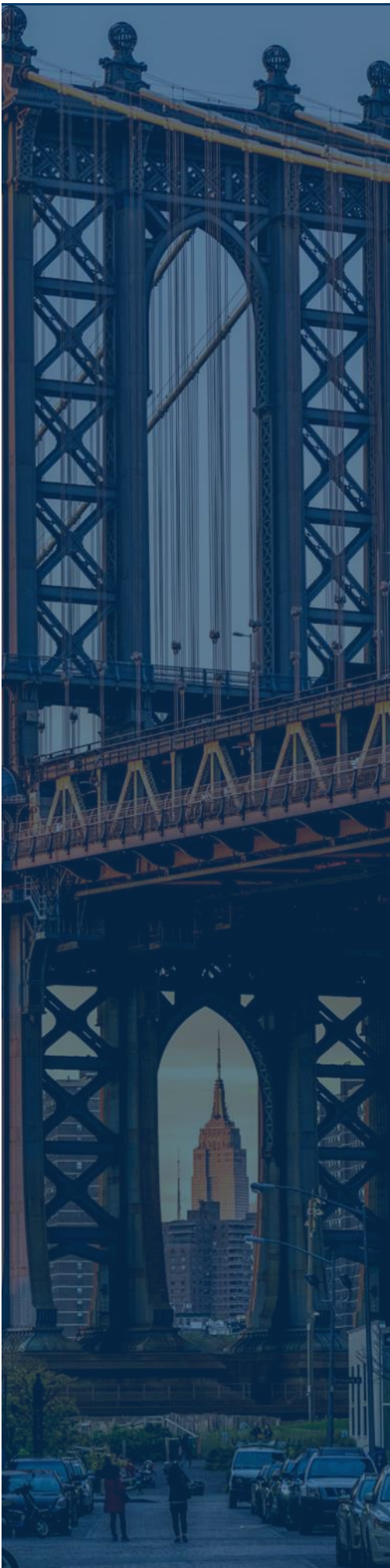
Program Portfolio 2024 to 2025

NYC DCAS
Citywide Administrative Services

CUNY School of
Professional Studies **CUNY**

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A Message from Our Team

Welcome to another year with the DCAS Energy Management Institute!

Since 2009, the Energy Management Institute (EMI) has served nearly 3,000 unique City employees, all of whom are committed to reducing greenhouse gas emissions and being a critical part of New York City's greener future. EMI's impact spans across 44 agencies (and counting) with topics including fundamental concepts, technical knowledge, data analysis, and project management.

Now in our 16th year, we are pleased to announce the addition of exciting new courses to our portfolio:

- LEED Advanced Professional (AP) credentials. By popular demand, we will be offering a learning path to earn the LEED AP with Existing Building Operations and Maintenance (O+M) Specialty. This learning path covers training and requisite exams that enables participants to obtain both the Green Associate and AP O+M credentials.
- Design Build Bootcamp. Learners participating in this industry-leading course will walk away armed with alternate project delivery concepts and skills, ready to more cost-effectively and collaboratively tackle construction projects.
- Enhanced self-paced training options. New to our library, you will see content on electrification (including electric vehicles), heat pumps, and building automation systems.

As part of our commitment to making a tangible impact, learners who completed trainings will be invited to share success stories. This includes sharing any improvements in their building energy consumption, and other such demonstrations of measurable outcomes which may stem from their participation in this program.

As always, we value your input and encourage you to share any questions or feedback you may have. We believe that open communication is key to our continuous improvement and ensuring that our courses meet your expectations.

Whether you are joining us in the classroom or participating in virtual training, we look forward to an engaging and rewarding year ahead.

For more information about the City's energy management initiatives, you can visit the DCAS Energy Management [page](#). Additionally, you can find more details about our program on our webpage: <https://cuny.swoogo.com/emi> or reach out to us via email at EMItraining@sps.cuny.edu.

Thank you for being a part of EMI's journey towards a sustainable and energy-efficient future for New York City. Together, we can make a lasting difference!

Best,
The EMI Team

City University of New York, School of Professional Studies
Department of Citywide Administrative Services, Division of Energy Management

About the EMI Program

The Energy Management Institute (EMI) is a training program offered by the Department of Citywide Administrative Services (DCAS) Division of Energy Management (DEM) in collaboration with the City University of New York's School of Professional Studies (SPS), CUNY Building Performance Lab (BPL), and the City's Citywide Training Center (CTC).

New York City has ambitious climate mitigation goals, and aggressive reduction of greenhouse gas emissions is a key strategy. Since energy use in buildings is a major source of emissions, building and energy management staff have a critical role in reducing energy. Through training, EMI helps empower City staff to make energy-smart decisions, implement operational improvements, and advocate for energy retrofits and clean energy projects across the City's portfolio.

Today, through EMI, DEM offers a diverse set of courses that provide targeted competency-based training and integrate national certification requirements. The courses are led by experienced practitioners in the field and are open to all City staff free of charge.

Who should take EMI courses?

While many EMI courses are geared towards building operators and facilities management staff, there are offerings suitable for any staff involved in energy management in City buildings.

What is a typical virtual EMI session experience like?

EMI courses range in length from half-day workshops to months-long courses. Depending on the course, there may be up to 20 students per class. EMI's virtual sessions are instructor-led, and students participate via online platforms. Most sessions take the same amount of time as an in-person training, and will still have the same

expectations on project deadlines, exams, and class participation, such that the program complies with third-party certification requirements.

How do I know which EMI course is right for me?

Staff can also select the courses that are right for them based on the following factors: breadth of topics covered as it relates to their job responsibilities, certifications required, level of in-going expertise, and time commitment to course. Please see the [Learning Paths section](#).

What do City staff need to do to participate in an EMI course?

To participate, potential students should complete the following five steps:

- **Enroll:** To enroll in an EMI course, potential students first should seek and receive permission to participate in the course from their direct supervisor(s). They should then [register online](#) before the course's designated start date.
- **Participate:** Students should attend sessions, complete online modules and exams, if applicable, and do required assignments and projects. For tips on how to successfully participate in a virtual session, please review the [Ensuring a Successful Virtual Learning Experience section](#).
- **Provide feedback:** Students should complete in-session and post-session evaluations to provide feedback on their experience. EMI uses this information to improve the course for future students.
- **Take any necessary certification exams:** CUNY SPS helps City staff complete their paperwork to take certification exams and receive credentials. DEM provides funding for City staff to take credential exams one time.
- **Apply lessons learned:** Students are expected to work towards implementing the energy management best practices that they have learned, at their agencies.

When are EMI courses offered?

EMI courses are offered according to a fall and spring semester schedule and take place during standard working hours. In addition, DEM offers select courses during Learning Fairs.

How can I register online?

EMI accepts online applications for courses via the [online registration portal](#). Visit the course catalog and select courses to begin the course application process. City employees are required to keep their profile updated, including accurate agency, supervisor, and contact information. Guidelines on how to register are outlined in more detail in the [Registration Guidelines section](#).

What other important information about EMI do I need to know?

Registration Guidelines

City employees should refer to their agency's training guidelines and must obtain their supervisor's (and, depending on their agency, their training liaison's and HR department's) approval before participating in EMI courses. EMI will notify supervisors upon verification of eligibility and final enrollment, but City employees must obtain supervisor approval before registration. See the [Registration Guidelines section](#) for the complete EMI registration guidelines.

Course Enrollment Cancellation Policy

If a City employee registers for an EMI course but drops out before course start, CUNY SPS must receive the request to cancel enrollment in writing at least seven business days before the confirmed start date. Agencies (i.e., supervisors, training liaisons) are strongly recommended to designate a qualified participant for substitution up to the commencement of the class. Failure to do so may result in City employees being unable to apply for future courses.

Course Attendance Policy

City employees participating in an EMI course are expected to attend all scheduled sessions and arrive by the scheduled start time. Excessive lateness or absences will result in the employee being dropped from the course. In the event of an emergency, illness, or other unforeseen circumstances which would prevent participants from attending a session or taking a scheduled exam, they are expected to contact their course instructor and the designated CUNY Learning Specialist about the absence and make any necessary arrangements to complete missed assignments/exams prior to the next class. City employees are not permitted to participate in training while out on annual leave or disability.

Course Academic Integrity Policy

CUNY SPS and DEM are committed to upholding CUNY's Academic Integrity Policy. To this end, students are expected to submit assignments that reflect their own individual efforts and to seek support directly from the course instructor when they encounter challenges with the course requirements. Students who submit work that has been copied from other students or sources will be penalized and withdrawn from the course. Unless otherwise indicated by the course instructor, group projects will not be accepted. More information can be accessed [here](#).

Anti-Discrimination Policy

The DCAS Energy Management Institute adheres to the City University of New York (CUNY) policy on Equal Opportunity and Non-Discrimination to ensure a learning environment free from discrimination. This policy is established to align with the CUNY policy, ensuring that no individual involved in continuing education and training (CE/T) is subjected to discrimination on any basis. The EMI program enforces the CUNY-wide policy on anti-discrimination, ensuring compliance and promoting equality and fairness in all its activities. The full CUNY policy can be accessed [here](#).



No-shows, Late Withdrawals, and Mid-course Drops

A no-show, late withdrawal, or mid-course drop, effectively resulting in an empty seat, represents a waste of City funding allocated to the enrollee. This is a training and professional development investment that could have been redirected to another public / civil servant. This could also adversely affect other City staff's ability to equitably access these energy training and professional development opportunities in the future.

We strongly encourage City staff to:

- ✓ Before signing up, please fully review the course description, schedule, and time commitment to confirm if the course topic and duration are right for you.
- ✓ Once accepted into the course, please fully participate in, and complete all classes, coursework, and examinations.

Moving forward, the EMI Program reserves the right to decline course registration requests due to previous history of multiple / unjustified no-shows or withdrawals.



Accessing EMI Online Materials

Students can access online instructional materials through a dedicated portal, [Blackboard Learning Management System \(LMS\)](#). Students will be able to access course materials on the LMS once they are approved for a course.

What are the Learning Fairs?

During the Learning Fairs, DEM and CUNY SPS offer half-day courses over a concentrated two to three day period. Learning Fairs are designed to serve both (1) City staff who hold either BOC-1 or BOC-2 credentials and want to maintain their active credentials and (2) City staff who seek to expand their energy management knowledge in specific areas, but do not necessarily have those credentials.

Can City staff contribute to EMI course development?

Yes! DEM, CUNY SPS, and other partners work together to update courses to include the newest developments and technologies. We are always looking for subject matter experts (SMEs) to contribute to course development. If you are interested in supporting EMI as a SME, please contact the [DEM Program Manager](#).

Are EMI courses the only energy-related training that DEM provides?

No! In addition to the training opportunities offered through EMI, DEM also offers three other energy management training options to City staff to support their professional development. In particular:

- **Customized energy management training available for agency staff using Agency Energy Training funding:** City agencies can apply for expense funding to offer specialized energy-related training to their staff through the Agency Energy Training (AET) Funding Program. (Previously, DEM has focused on funding manufacturer-specific, hands-on training through the ExCEL Program, as distinct from the

broader overview training provided through EMI.) Generally, DEM-funded Agency Energy Personnel lead the preparation of proposals and administration of AET-funded training.

- **In-house training directly offered by DEM:** DEM also directly provides select training in-house on specific topics core to our work. DEM continues to work on refining the set of in-house training that we offer. However, we generally provide EC3 and EnerTrac training on a quarterly basis.
- **Energy-related training videos:** In addition, DEM has worked with CUNY SPS to develop a range of energy-related training videos for City staff. The full collection of training videos is available through the [DEM Videos website](#).

If you have questions about AET-funded, in-house, or video training opportunities, please contact the [DEM Program Manager](#).

Who can I contact if I have further questions?

DEM EMI Team

Gretel Guivelondo, *Senior Program Manager, Energy Training and Workforce Development*
Fatin Chowdhury, *Analyst*
Email: gguivelondo@dcas.nyc.gov;
fachowdhury@dcas.nyc.gov

CUNY SPS EMI Team

Michelle Attles, *Program Director*
Rachid Eladlouni, *Sr. Program Manager of Program Effectiveness*
Erin Morrison-Sadaka, *Sr. Program Manager of Training Operations*
Muamer Rasic, *Lead Data Analyst*
Jeffrey Ramos, *Learning Specialist*
Jzaquan Green, *Learning Specialist*
Roxy Ho, *Learning Management System (LMS) Administrator*
Krystal Ostrowski, *Program Coordinator*
Email: EMltraining@sps.cuny.edu

Ensuring a Successful Virtual Learning Experience

You should expect quality learning delivered by subject matter experts and experienced instructors, however, you should also expect to assume responsibility for your own learning.

EMI's virtual classroom setting is similar to a traditional classroom environment, in that most sessions are instructor-led, and everyone participates live at the same time using virtual training platforms. Most sessions will still take the same amount of time as an in-person training, and sessions will still have the same expectations regarding project deadlines, exams, and class participation, such that the program complies with third-party certification requirements.



Video Participation

Video participation is required during EMI's virtual sessions in order to promote interaction and engagement with your instructors, classmates, as well as the course topics. To participate in EMI courses, **participants must have a working built-in camera or webcam**. Mobile devices/tablets do not have the necessary features for participation in the course activities and are not permitted.

Minimum Requirements for Zoom

Supported Operating Systems:

- Windows 7 or newer version;
- macOS X with macOS 10.9 or later;
- Other supported Operating Systems.

Supported Browsers:

- Windows: Internet Explorer 11+, Edge 12+, Firefox 27+, Chrome 30+;
- macOS: Safari 7+, Firefox 27+, Chrome 30+;
- Linux: Firefox 27+, Chrome 30+;
- Other supported browsers.

For more information about Zoom's Minimum Technology Requirements, please visit the [System Requirements for Zoom](#) page.

Before the session

- **Test your equipment.** EMI courses have minimum technology requirements so participants can be successful in a course, which include: a computer or laptop, reliable internet connection, working camera and microphone.
- **Learn the technology.** Most EMI courses will be deployed through Zoom, and we encourage you to attend EMI-led Zoom orientation / walkthrough sessions to familiarize yourself with the platforms prior to the first class. Additional resources are:
 - [How To Join a Zoom Meeting](#)
 - [How to configure Zoom Audio/Video](#)
 - [How to use Zoom Meeting Controls](#)

During the session

- **Prioritize your learning.** Identify a conducive learning space in your home or work location, and as much as possible, refrain from working on other tasks during the class.
- **Participate and connect.** Use the Zoom platform features to engage with your instructors and fellow learners. All participants are highly encouraged to add to the discussion, as learners usually find value hearing their colleagues' real-world work experience.
- **Communicate if you experience technical issues,** have further questions, or encounter external concerns that impact your participation, let the instructor and program manager know. We will work with you to troubleshoot or identify possible accommodations.

After the session

- **Share feedback.** Provide honest responses about your virtual training experience through surveys or course evaluations.
- **Continue learning.** Take advantage of virtual learning opportunities, such as other EMI courses, [DCAS Citywide Training Center](#) courses and external webinars and conferences.
- **Apply your new skills.** The City has just invested time and money on your training. We hope you are ready and confident to play your part in supporting the citywide energy reduction goals!

Spring 2025 Course Schedule

While most courses are still in a virtual online / remote format, some Energy Management Institute courses are now being deployed in a hybrid or fully in-person format.

COURSES	TRAINING DATES
Retrofit Now! Reducing Carbon and Complying with LL97	January 28, 30, February 4, 6
Building Operator Certification, Level 1 (in person)	NYC Schools cohort (DOE-only): February 3, 10, 24, March 3, 10, 24, April 7, 22, 29, May 13, 27, June 10
Advanced Building Re-Tuning Training and Coaching (ABRTC)	Cohort 2: February 4, 11, March 4, 25, April 22, May 13, June 3, 24
Design Build Owner's Bootcamp (in person)	February 5, 6, 7
Passive House Webinars	Schools & The Passive House Standard: February 26 Introduction to Passive House Retrofits: April 23
LEED AP Operations + Maintenance (LEED AP O+M) Accreditation (in person)	AP Operations + Maintenance Exam Prep / Training: March 12 AP O+M Exam: April 9
Advanced Microsoft Excel for Energy Professionals	March 19
Overview of Real-Time Metering	Session A: March 26 Session B: Summer / June TBD
Passive House Tradesperson Bootcamp (for SCA, in person)	April 7, 8, 9, 10, 11
Certified Energy Manager (CEM) Exam Preparation (in person)	April 21, 22, 23, 24, Exam on April 25
AEE Project Management for Energy Professionals	May 29 and 30
ASHRAE Instructor-Led Webinars	Operations & Maintenance of High-Performance Buildings: May 1 and 2 Guideline 36: Best in Class HVAC Control Sequences: May 5
Introduction to EC3	May 5
Renewable Energy 101 (hybrid)	May 19, 20, 21, 22, 23
Electrification and Building Operations (in person)	June 3 and 4
Building Re-Tuning Training and Coaching (BRTC)	Cohort C: February 6, 13, March 6, 27, April 24, May 15, June 12, July 3, 24 Cohort D: March 26, April 2, 23, May 14, June 4, 25, July 16, August 6, 27 Cohort E: May 1, 8, 29, June 26, July 17, August 7, 28, September 18, October 9
Self-paced Webinars	On-demand, available for 30 days
Fundamentals of Building Systems	On-demand, available for 14 days

Register via cuny.swoogo.com/emi or choose courses through bit.ly/emi-cuny_catalog



Course Descriptions

Fundamentals of Building Systems



NYC energy and climate goals, principles of building systems



self-paced

Course Structure

The Fundamentals course is intended to help fill knowledge gaps for students without a technical background so they can succeed in BOC-1. It was developed to respond to the increased number of City professionals pursuing BOC-1 certification, but needing basic knowledge of building operations fundamentals (e.g., the role of the building envelope). In FY23, CUNY SPS completed the course maintenance project to transition the hybrid course of two (2) half-days of in-person sessions taught by a live instructor to one self-paced online module. The new module will serve as an introduction to the course's ten (10) existing topical self-paced online modules delivered through the Learn LMS.

Target Audience

Fundamentals is geared towards City energy management or relevant staff who do not have experience in managing building operations and/or extensive working knowledge of building systems and equipment. In most cases, Fundamentals is a pre-requisite for non-building operators who seek to complete BOC-1.

Learning Path

Fundamentals is mapped to the **foundational category** relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **LOW** (up to seven hours a week, or, courses that only run for one day).


Fundamentals of Building Systems


Semester(s)	Fall 2024
Duration	self-paced
Day	self-paced
Time	self-paced
Location	Virtual
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	8
Minimum Technology Requirements (for virtual participation)	Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended.

Instructors and staff will actively check your progress throughout the course and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

Building Operator Certification Level 1 (BOC-1)

 building systems, efficient operations, energy data

 six months

 third-party certification

*****Please see the next page for the location and the list of minimum technology requirements.*****

Course Structure

BOC-1 is the foundational energy efficiency course for building operators working in City facilities. It is designed to help building operators identify opportunities to make their facilities more energy efficient so they can contribute to meeting City energy and emissions reductions goals. BOC-1 provides an overview of building systems and equipment, including electrical systems, mechanical systems, lighting technologies, and building controls. It also introduces students to energy data management and analysis and operational improvements that can improve energy efficiency and occupant comfort.

BOC-1 consists of 12 sessions taught by subject matter experts over a four-month (18 weeks) period, complemented by 14 self-paced online modules. To successfully complete the course, students must attend all live online and in person sessions and complete all online modules; take and pass four module-specific exams; and submit four practical project assignments focused on applying concepts learned in class to the facilities where they work. Students who do so can pursue the BOC-1 certification from the Northwest Energy Efficiency Council (NEEC). CUNY SPS and NEEC will work together to assist City staff in completing their

paperwork for the credential and taking the certification exam. See the course syllabus [here](#).

Target Audience

BOC-1 is open to building operators, facilities management staff, and other energy management staff working in City buildings. The course is especially well-suited for:

- Building operators who may have limited formal building systems training, but have substantial on-the-job experience with building systems.
- Energy management staff who have received some energy efficiency training and are seeking to deepen their understanding of building system and equipment concepts. Energy management staff are encouraged to take the Fundamentals course before enrolling in BOC-1.
- In most cases, the Fundamentals course is a pre-requisite for non-building operators who seek to complete BOC-1.

Learning Path


BOC-1 is mapped to the **building operations** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **HIGH** (up to 15 hours a week over multiple weeks, or, courses that include a certification exam that requires further subject matter study).

BOC-1

Semester(s)	Fall 2024 (for all agencies) and Fall 2024/Spring 2025 (for DOE only)
Duration	12 sessions over a span of six months
Day	Please refer to the course schedule
Time	General Agencies: 9 to 4pm DOE: 8 to 3pm
Location	<i>General Agencies:</i> 24th Floor, Citywide Training Center, 1 Centre Street, New York, NY 10007 <i>DOE:</i> Local 891 Training Center at the Brooklyn Navy Yard, Building 292, Suite 401, Unit 358, 63 Flushing Avenue, Brooklyn, NY 11205
Time Commitment to Course (TCC)	High
Renewal Points/Hours	76
Minimum Technology Requirements (for virtual participation)	Computer or Laptop (Required for DOE staff) Microphone & Speakers/Headphones OR Headset (Required) Re: virtual courses: Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above. Re: in-person courses: Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion if you are a no-show for a significant number of in-person sessions.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

Building Operator Certification Level 2 (BOC-2)

 high-performance operations,
system calibration, troubleshooting

 seven months

 third-party certification

Course Structure

BOC-2 offers advanced training to City staff who meet the enrollment pre-requisites and want to further their building energy management skills. BOC-2 is comprised of six core modules: (1) Best Practices for High-Performance Operations and Maintenance; (2) Sensors, Calibration, and Transmitters; (3) HVAC Controls Optimization; (4) Energy Strategies: Control Sequences of Operation; (5) Electrical Maintenance and Troubleshooting; and (6) Boiler Plant and Hydronic System High-Performance O&M.

BOC-2 consists of 22 synchronous online + in person sessions taught by subject matter experts over a seven-month (30 weeks) period, complemented by 10 self-paced online modules. The course also includes activities guided by subject matter experts and learning coaches. To successfully complete the course, students must attend all sessions and complete all online modules; take and pass module-specific exams; and submit practical project assignments focused on applying concepts learned in class to the facilities where they work. Students who do so can pursue the BOC-2 certification from the Northwest Energy Efficiency Council (NEEC). CUNY SPS and NEEC work together to assist City staff in completing their paperwork for the credential and for taking the certification exam. See the course syllabus [here](#).

Target Audience

BOC-2 is designed for students who have previous intensive energy management training or experience. Specifically, it is meant for students who have successfully completed BOC-1 and/or are Certified Building Operators (CBOs), Certified Energy Managers (CEMs), Certified Building Commissioning Professionals (CBCPs), or Certified Energy Auditors (CEAs). On a case-by-case basis, students may be able to substitute other advanced training or experience for these credentials; please reach out to CUNY SPS to request enrollment permission.

Learning Path

BOC-2 is mapped to the **building operations** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **HIGH** (up to 15 hours a week over multiple weeks, or, courses that include a certification exam that requires further subject matter study).

BOC-2


Semester(s)	Not offered this fiscal year
Duration	22 sessions over a span of seven months
Day	N/A
Time	N/A
Location	N/A
Time Commitment to Course (TCC)	High
Renewal Points/Hours	158
Minimum Technology Requirements (for virtual participation)	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for Zoom

Re: virtual courses: Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

Re: in-person courses: Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion if you are a no-show for a significant number of in-person sessions.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

Building Re-tuning Training and Coaching (Standard and Advanced)

 building re-tuning, trend chart analysis, system optimization

 four months



Please see the next page for the list of minimum technology requirements.

Course Structure

This course is designed to teach building operators, chief engineers, agency energy personnel, and anyone else who works closely with the day-to-day operation of a City building, how to understand, interpret, and optimize a building's operation using data, engineering insight, and tools provided through the course. Through the work of the Building Optimization Team (BOT), DEM works with building operations staff to optimize their facilities' energy load through operational improvements. DEM and building operations staff identify potential efficiency improvements using real-time energy data and building operations data, typically from a building automation system ("BAS"). Successful retuning implementation takes advantage of the real-time metering ("RTM") that DEM has installed at various agency facilities, as well as the Building Re-tuning (BRT) protocol developed by Pacific Northwest National Lab ("PNNL"). Formerly named Load Management Training and Coaching (LMTC), BRTC will cover many of the same principles from that course.

The standard BRTC course is a nine (9) session course that spans two lecture-based trainings and seven hands-on coaching sessions.

The Advanced BRTC course is an eight (8) session course that spans two lecture-based trainings and six hands-on coaching sessions. The course covers the standard concepts of BRTC, but includes the use of a new online platform that collects and displays data from the building automation system ("BAS"), making the data collection more efficient and allows the participants to focus on analyzing the data.

Target Audience

BRTC is open to building operators, chief engineers, agency energy personnel, and anyone else who works closely with the day-to-day operation of a City building where the following is strongly encouraged: (1) Have successfully completed BOC-1; (2) Are assigned to and/or are responsible for at least one agency building where major equipment can be controlled; and (3) Can access trend logging functions in a BAS/BMS throughout the duration of the course.

Learning Path

This course is mapped to the **building re-tuning** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **MEDIUM** (up to seven hours a week, or, courses that only run for one day).

Standard and Advanced BRTC

Semester(s)	Fall 2024 and Spring 2025
Duration	Standard: Nine sessions over a span of five months (one session a week, every three to four weeks) Advanced: Eight sessions over a span of five months (one session a week, every three to four weeks)
Day	Please refer to the course schedule
Time	TBD
Location	Virtual via Zoom
Time Commitment to Course (TCC)	Medium
Renewal Points/Hours	28
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for Zoom Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****



Note on Participation Approval and Cohort Selection

Please note that DCAS Division of Energy Management (DEM) may prioritize staff at agencies that have recently completed energy efficiency projects. If Agency Energy Personnel seek to enroll in this training offering, they should confirm that at least one building operator from their agency also will attend.

DEM will work to confirm both that potential students meet the prerequisites for the training offering and that their buildings are good candidates for BRTC participation. Following this process, DEM's BRT staff and CUNY SPS will place students in the most suitable cohort, such that they can participate alongside other staff from their own or similar agencies.

Certified Energy Manager (CEM)



high-performance ops, maintenance and commissioning, M&V



one week



third-party certification

*****This cohort is fully in-person. Please see the next page for the class location.*****

Course Structure

This course enables students to obtain the Certified Energy Manager (CEM) credential by preparing and registering them for the CEM certification exam, offered by the Association of Energy Engineers (AEE). CEM operates as a standard for qualifying energy professionals in the United States and abroad. It is recognized by the U.S. Department of Energy, the Office of Federal Energy Management Programs, and numerous state energy offices, utilities, corporations, and energy service companies.

The course consists of four instructional sessions taught by subject matter experts and a full-day comprehensive certification exam. The five-day course is offered over a one-week period. To successfully complete the course, students must meet the stated eligibility criteria; attend all instructional sessions; submit an exam application form before sitting for the exam; (provided during the prep period); and pass the four-hour, written, open-book CEM exam. See the course syllabus [here](#).

Target Audience

CEM is designed for students who have previous

intensive energy management training or experience. DEM will give preference to students who have successfully completed both BOC-1 and BOC-2, but accommodate other qualified students as space permits. Students seeking to substitute other advanced training or experience for BOC-1 or BOC-2 should reach out to CUNY SPS to request enrollment permission. All students must meet AEE's combined education and experience eligibility requirements summarized on the next page (i.e., they can qualify under any one of the six qualification pathways).

Learning Path

CEM is mapped to the **AEE certification** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **HIGH** (up to 15 hours a week over multiple weeks, or, courses that include a certification exam that requires further subject matter study).

Certified Energy Manager

Semester(s)	Spring 2025
Duration	Four sessions + one day for the scheduled certification exam
Day	Please refer to the course schedule
Time	8-5pm - Exam: 9-1pm
Location	CUNY School of Professional Studies, 119 W 31st St, New York, NY 10001
Time Commitment to Course (TCC)	High
Renewal Points/Hours	33

Education and Experience Requirements for Certification

4-yr. degree in Engineering or Architecture, AND	3+ yrs. experience in energy engineering or energy management
4-yr. degree in Environmental Science or Physics, AND	4+ yrs. experience in energy engineering or energy management
4-yr. degree in Business (or related field), AND	5+ yrs. experience in energy engineering or energy management
2-yr. degree in Energy Management, AND	6+ yrs. experience in energy engineering or energy management
2-yr. degree in a technical topic, AND	8+ yrs. experience in energy engineering or energy management
No specific educational background, AND	10+ yrs. experience in energy engineering or energy management

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****



Important Certification Exam Guidance

Examination scheduling

Participants must take the certification exam on the scheduled date. Participants who apply to retake the course as a “refresher” prior to taking the exam will not be approved by DCAS.

Examination retest

EMI only funds for one round of certification exam, which is included in this course. Participants who fail the exam can retest at their own expense. The retest fee for paper and pencil exams held with live trainings and remote computer-based exams is \$250. For more information, go to retesting at [AEE](#).

Certified Energy Auditor (CEA)



energy use and economic analysis,
energy auditing



one week



third-party certification

*****This cohort is fully in-person. Please see the next page for the class location.*****

Course Structure

This course enables students to take the Certified Energy Auditor (CEA) certification exam, which is offered by the Association of Energy Engineers (AEE). CEA operates as a standard for qualifying energy professionals in the United States and abroad; the CEA course is designed to provide participants with an in-depth, technical review of energy auditing. A CEA is an individual who evaluates and analyzes how energy is being used in facility and identifies energy conservation opportunities and makes recommendations where consumption can be reduced and optimized. The course will help improve the practice of energy auditors by encouraging energy auditing professionals in a continuing education program of professional development.

The CEA course consists of four in-person instructional sessions taught by subject matter experts and one (1) day for the comprehensive certification exam, administered on the fourth day. To successfully complete the course, students must meet the stated eligibility criteria and pass an open book examination.

Target Audience

CEA is designed for students who are energy managers, energy analysts, building operators, senior stationary engineers, stationary engineers, custodian engineers, architects, engineers, project managers, construction project managers, and trades supervisors with extensive energy auditing experience. DEM will give preference to students who have successfully completed both BOC-1 and BOC-2, but accommodate other qualified students as space permits. Students seeking to substitute other advanced training or experience for BOC-1 or BOC-2 should reach out to CUNY SPS to request enrollment permission. All students must meet AEE's combined education and experience eligibility requirements summarized on the next page.

Learning Path

CEA is mapped to the **AEE certification** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **HIGH** (up to 15 hours a week over multiple weeks, or, courses that include a certification exam that requires further subject matter study).

Certified Energy Auditor (CEA)

Semester(s)	Not offered this fiscal year
Duration	Four sessions + one day for the scheduled certification exam
Day	Please refer to the course schedule
Time	N/A
Location	N/A
Time Commitment to Course (TCC)	High
Renewal Points/Hours	33

Education and Experience Requirements for Certification

Bachelor's degree OR Professional Engineer (PE) OR Registered Architect (RA) AND	3+ yrs. experience in energy auditing and/or participating in team doing energy assessments
4-yr. unrelated degree AND	5+ yrs. experience in energy auditing and/or participating in team doing energy assessments
2-yr. associate degree	5+ yrs. experience in energy auditing and/or participating in team doing energy assessments
Current Status of Certified Energy Manager (CEM) AND	3+ yrs. experience in energy auditing and/or participating in team doing energy assessments
No specific educational background, AND	10+ yrs. experience in energy auditing and/or participating in team doing energy assessments

***To enroll, potential students should apply through EMI's [online registration portal](#). ***



Important Certification Exam Guidance

Examination scheduling


Participants must take the certification exam on the scheduled date. Participants who apply to retake the course as a “refresher” prior to taking the exam will not be approved by DCAS.

Examination retest

EMI only funds for one round of certification exam, which is included in this course. Participants who fail the exam can retest at their own expense. The remote computer-based exam retest fee for CEA is \$250. For more information, go to retesting at [AEE](#).

Certified Building Commissioning Professional (CBCP)

 building systems design, install, and testing, commissioning

 one week

 third-party certification

*****This cohort is fully in-person. Please see the next page for the class location.*****

Course Structure

The CBCP course focuses on commissioning principles, practices, and technologies and prepares individuals to take the Certified Building Commissioning Professional (“CBCP”) certification exam, which is offered by the Association of Energy Engineers (“AEE”). CBCP is a standard to qualify individuals involved in commissioning equipment and systems in buildings and facilities.

Building commissioning professionals ensure that new building systems are designed, installed, tested, and capable of being operated and maintained according to the owner’s intent, requirements, and operational needs. They lead, plan, coordinate and document the commissioning process on buildings such as hospitals, data centers, airports, university campuses, schools, office blocks. They interact with commissioning teams and field personnel such as contractors, vendors, testing agencies, and auditors. They may also manage renovations, upgrades, and tune-up of systems to restore existing buildings to high productivity and improved efficiency.

The CBCP course consists of four in-person instructional sessions taught by subject matter experts and one (1) day for the comprehensive

certification exam, administered on the fifth day. To successfully complete the course, students must meet the stated eligibility criteria and pass an open book examination.

Target Audience

CBCP is designed for students who are building commissioning professionals. DEM will give preference to students who have successfully completed both BOC-1 and BOC-2, but may accommodate other qualified students as space permits. Students seeking to substitute other advanced training or experience for BOC-1 or BOC-2 should reach out to CUNY SPS to request enrollment permission. All students must meet AEE’s combined education and experience eligibility requirements summarized on the next page.

Learning Path

CBCP is mapped to the **AEE certification** category relative to EMI’s suggested [learning paths](#). The **time commitment to course (TCC)** is **HIGH** (up to 15 hours a week over multiple weeks, or, courses that include a certification exam that requires further subject matter study).

Certified Building Commissioning Professional (CBCP)

Semester(s)	Not offered this fiscal year
Duration	Four sessions + one half day for the scheduled certification exam
Day	Please refer to the course schedule
Time	N/A
Location	N/A
Time Commitment to Course (TCC)	High
Renewal Points/Hours	33

Education and Experience Requirements for Certification

Bachelor's degree in science, engineering, architecture, business, law, or finance AND 3+ yrs. experience in in facilities management HVAC or process engineering design, construction project management, electrical/controls design, installation or operations, testing, adjusting and balancing, or building commissioning

OR Professional Engineer (PE) OR Registered Architect (RA) AND

4-yr. unrelated degree AND

5+ yrs. experience in in facilities management HVAC or process engineering design, construction project management, electrical/controls design, installation or operations, testing, adjusting and balancing, or building commissioning

2-yr. associate degree AND

5+ yrs. experience in in facilities management HVAC or process engineering design, construction project management, electrical/controls design, installation or operations, testing, adjusting and balancing, or building commissioning

No specific educational background AND

10+ yrs. experience in in facilities management HVAC or process engineering design, construction project management, electrical/controls design, installation or operations, testing, adjusting and balancing, or building commissioning

Current Status of Certified Energy Manager (CEM)

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****



Important Certification Exam Guidance


Examination scheduling


Participants must take the certification exam on the scheduled date. Participants who apply to retake the course as a “refresher” prior to taking the exam will not be approved by DCAS.

Examination retest

EMI only funds for one round of certification exam, which is included in this course. Participants who fail the exam can retest at their own expense. The remote computer-based exam retest fee for CBCP is \$200. For more information, go to retesting at AEE.

Project Management for Energy Engineers and Energy Managers Training Program

 project management, energy project formulation

 two days

*****This cohort is fully online. Please see the next page for the technology requirements.*****

Course Structure

This program delves quickly into best practices in project management that have been learned, vetted, and proven from over 30 years of project and program management experience in diverse industrial and commercial settings. Participants will get the opportunity to learn lessons that are seldom covered in textbooks and are often only acquired through experience. First-hand insight into the "A to Z of management for energy projects" and provides an introduction to commercially available project management programs/tools will be provided. Participants will be exposed to all phases of project implementation and execution, beginning with the formulation, vetting, and acceptance of the project objectives followed quickly by commissioning and project closure. Examples of typical large projects – with budgets exceeding 0.5 million dollars and schedules extending over many months – are also reviewed.

The course consists of two half-day sessions taught by a subject matter expert. To successfully complete the course, students must be present during the class session.

Target Audience

This course is designed for energy engineers and energy managers, as well as maintenance engineers and facility managers. However, this course is also available for technical writers, procurement professionals, and others involved in developing and executing energy management projects.

Learning Path

The Project Management for Energy Engineers and Energy Managers Training Program is mapped to the **Specialized Training** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **MEDIUM** (up to 10 hours a week, or courses that only run for one week).

Project Management for Energy Engineers and Energy Managers Training Program

Semester(s)	Fall 2024
Duration	Two half-day sessions (totaling eight hours)
Day	Please refer to the course schedule
Time	12-4pm
Location	Virtual via Zoom
Time Commitment to Course (TCC)	Medium
Renewal Points/Hours	8
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for Zoom

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

Renewable Energy 101



renewable energy technologies,
installation, O&M fundamentals



one week



third-party certification

*****This cohort is hybrid, meaning some days are in-person. Please see the next page for the location and the list of minimum technology requirements.*****

Course Structure

Renewable Energy 101 provides City staff with an introduction to renewable energy technologies in the context of the City's clean energy goals. As the City prepares to meet the 100 MW solar installation goal as set forth in "One City: Built To Last" as well as the recent passage of Local Law 92 and 94 which requires green roofs or solar photovoltaic (PV) systems on the City's new construction and renovation projects, City agencies must be prepared to have a well-informed workforce that can provide operations and maintenance support for current and upcoming renewable energy installations. This introductory course will equip interested employees with the knowledge to advocate for, implement and maintain renewable energy technologies, especially on solar PV.

The course covers an overview of renewable energy technologies and policies; solar site scoping, installation and O&M fundamentals; as well as new technologies and battery storage. It consists of three (3) online instructor-led and two (2) in-person sessions facilitated by subject matter experts, which

includes lecture, activities, a hands-on lab and a field trip to a local solar installation. Participants who complete the course will receive 18 NABCEP CEUs towards PV Associate or PV Installation Professional exams. See the course syllabus [here](#).

Target Audience

This course is open to building operators, facilities management staff, and other relevant energy management staff in City buildings who support the installation, maintenance, and monitoring of solar PV and other renewable energy systems.

Learning Path

This course is mapped to the **specialized training** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **MEDIUM** (up to 10 hours a week, or, courses that only run for one week).

Renewable Energy 101

Semester(s)	Spring 2025
Duration	Five sessions over a span of one week
Day	Please refer to the course schedule
Time	9 - 4pm
Location	Room 418 at the New York City College of Technology 300 Jay St, Brooklyn, NY 11201 and virtual via Zoom
Time Commitment to Course (TCC)	Medium
Renewal Points/Hours	30
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for Zoom

Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

Retrofit Now! Reducing Carbon and Complying with LL97



building retrofitting concepts, NYC local law 97 overview



two weeks

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

Retrofit Now! Reducing Carbon and Complying with LL97 gives architects and other designers the insight they need to design for deep energy retrofits that help buildings meet NYC's new building code, avoid fines, and improve building letter grades. Agencies will find the course valuable in discussing options with their planning and design teams as they do their long-term capital planning. This course is offered and delivered by CUNY Building Performance Lab (BPL).

The Retrofit Now! course consists of four half-day sessions for a total of 14 hours, delivered in four days of virtual instructional sessions. To successfully complete the course, students must attend all classes.

Target Audience

Retrofit Now! is open to building operators, facilities management staff, and other relevant energy management staff in City buildings.

Learning Path

This course is mapped to the **specialized training** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **MEDIUM** (up to 10 hours a week, or, courses that only run for one week).

Retrofit Now! Reducing Carbon and Complying with LL97

Semester(s)	Spring 2025
Duration	Four sessions over a span of two weeks
Day	Please refer to the course schedule
Time	9 - 12:30pm
Location	Virtual via Zoom
Time Commitment to Course (TCC)	Medium
Renewal Points/Hours	14
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for Zoom

Instructors and staff will actively monitor your attendance and reserve the right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

GPRO Operations and Maintenance Essentials



evaluating building performance, efficiency measures



two days

*****This cohort is fully in-person. Please see the next page for location information.*****

Course Structure

In the GPRO Operations and Maintenance Essentials training, students will learn how to implement sustainable building operations using best practices and create a personalized action plan. The program provides practical tools to measure building performance and strategies to cut energy consumption and costs. By the end of the training, students will be able to take a systemic approach to building operations, assess building performance, and outline three actionable steps to improve efficiency. Moreover, students will gain the ability to explain the costs and benefits of efficiency measures, fostering a comprehensive understanding of sustainable building practices.

This course consists of two full-day sessions. After completing the training, you can earn a GPRO O&M Certificate by passing a 50-question multiple choice exam. Additionally, you'll gain access to short on-demand bonus courses on topics such as financing energy projects, interpreting energy audits, NYC Local Law 97 and more. To successfully complete the course, students must attend all class sessions.

Target Audience

This course is ideal for building staff such as: building superintendents, operators, facility and property managers, operating engineers, custodian engineers, and stationary engineers.

Learning Path

This course is mapped to the **building operations training** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **MEDIUM** (up to 10 hours a week, or, courses that only run for one week).


GPRO Operations and Maintenance Essentials

Semester(s)	Not offered this fiscal year
Duration	Two full-day sessions
Day	Please refer to the course schedule
Time	N/A
Location	N/A
Time Commitment to Course (TCC)	Medium
Renewal Points/Hours	12

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

Introduction to the Passive House Standard

 passive house principles, architectural design

 half day

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

Passive House goals and methodology change the way architects and builders think and work, making the architectural design itself a driver of climate, health, and social solutions. This is a 4-hour course that dives into the basic principles, history, certification, and the new frontiers of Passive House design as it continues to challenge and change industry expectations. All theory is then illustrated through several case studies outlining specific Passive House principles. By the end of this course, participants will be able to outline the basic principles of the Passive House Standard, outline the history of the Passive House Standard, and cite specifics of a few Passive House case studies.

The course structure consists of one four-hour session taught by a subject matter expert. To successfully complete the course, students must be present during the class session.

Target Audience

Passive House introductory courses are open to building operators, facilities management staff, and other relevant energy management staff in City buildings.

Learning Path

This course is mapped to the **specialized training** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **MEDIUM** (up to 10 hours a week, or, courses that only run for one week).

Introduction to the Passive House Standard

Semester(s)	Not offered this fiscal year
Duration	One half-day session (four hours)
Day	Please refer to the course schedule
Time	N/A
Location	Virtual via Zoom
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	4
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for Zoom

Instructors and staff will actively monitor your attendance and reserve to right to decline

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

Introduction to Passive House Retrofits

 building retrofitting concepts, passive house concepts

 half day

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

The Passive House standard is not just for new construction. Breathe sustainable life into old buildings using the Passive House Institute EnerPHit standards in your retrofit projects. Learn how existing structures can benefit from retrofits to move a structure from a low to high-performance building.

Applying the passive house standard to existing structure has its own unique challenges. This course enables participants to learn about the EnerPHit standards and process, and review these standards from the perspective of retrofitting existing structures. Through case studies of successful retrofits, see how to upgrade a building with respect to airtightness, insulation, thermal bridge reductions, high-performance windows, and ventilation.

The course structure consists of one four-hour session taught by a subject matter expert. To successfully complete the course, students must be present during the class session.

Target Audience

Passive House introductory courses are open to building operators, facilities management staff, and other relevant energy management staff in City buildings.

Learning Path

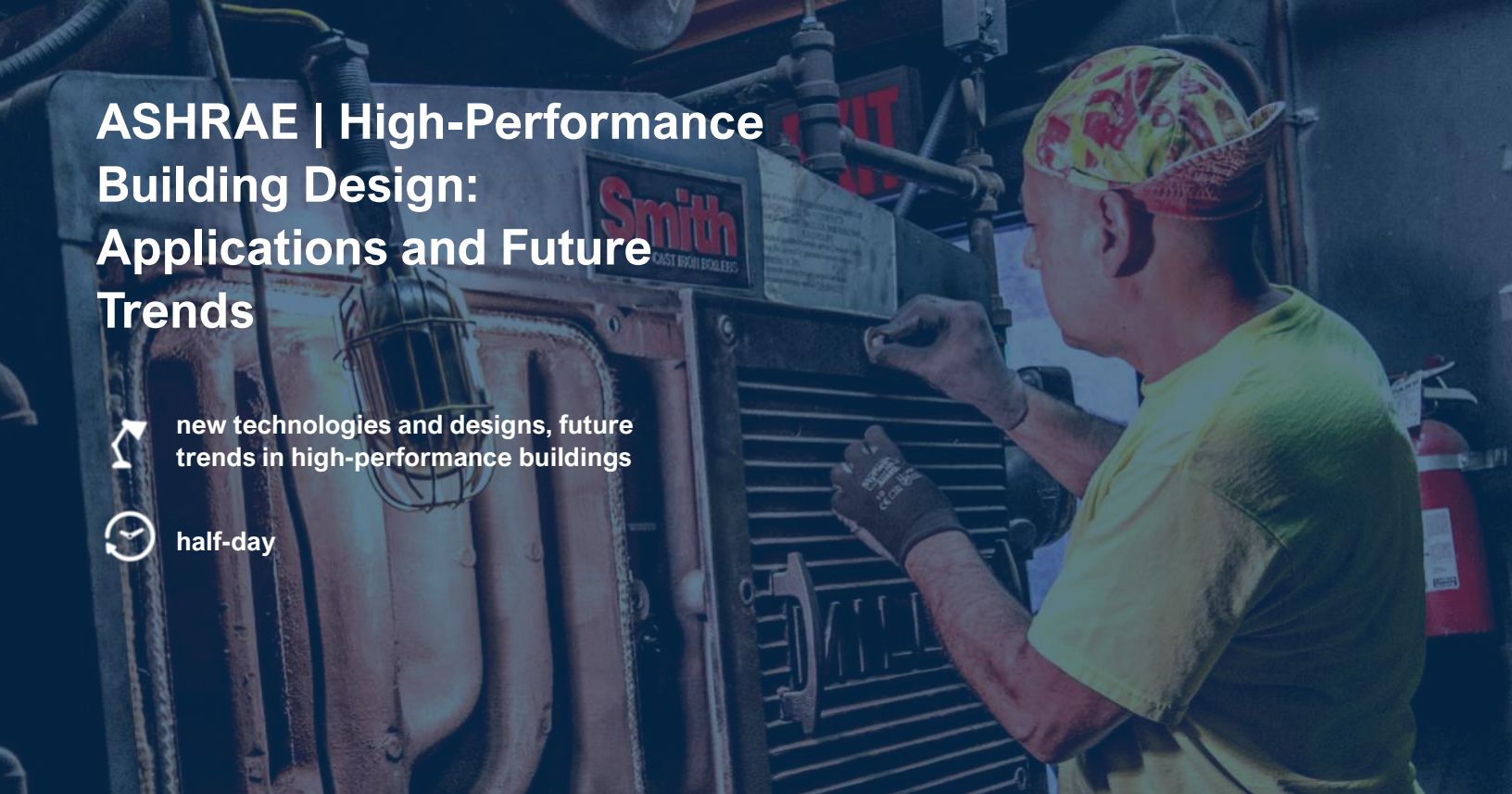
This course is mapped to the **specialized training** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **MEDIUM** (up to 10 hours a week, or, courses that only run for one week).

Introduction to Passive House Retrofits

Semester(s)	Spring 2025
Duration	One half-day session (four hours)
Day	Please refer to the course schedule
Time	N/A
Location	Virtual via Zoom
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	4
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for Zoom


Instructors and staff will actively monitor your attendance and reserve the right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****



ASHRAE | High-Performance Building Design: Applications and Future Trends

 new technologies and designs, future trends in high-performance buildings

 half-day

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

The High-Performance Building Design: Applications and Future Trends course presents the applications of new technologies and design concepts to help to achieve high-performance buildings, including net-zero / nearly net-zero buildings, as well as future trends in store (e.g., smart grid, smart buildings, “future proofing” design, resiliency). Along with the technical aspects of high-performance buildings, the course will also examine high-performance building design from both a technical perspective and from the perspective of investors, allowing for a more well-rounded understanding of all the different players involved. Finally, the course will delve into the future of high-performance buildings and how ASHRAE Standards address these important themes.

The course consists of a three-hour online workshop taught by ASHRAE instructors.

Target Audience

This course is designed for those with a background in energy management. Beyond this, it is also available for individuals with experience as such technicians, design engineers, facility managers, and building operators.

Learning Path

High-Performance Building Design is mapped to the **building operations training category** for facility managers and building operators within EMI's suggested [learning paths](#). The **time commitment to course (TCC) is LOW** as it is a course that only runs for half a day.

High-Performance Building Design: Applications and Future Trends

Semester(s)	Not offered this fiscal year
Duration	Two half-day sessions (totaling three hours)
Day	Please refer to the course schedule
Time	N/A
Location	N/A
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	3
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

ASHRAE | Energy Modeling Best Practices and Applications

 modeling principles, life cycle cost analysis, valuable quality control

 two days

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

Energy Modeling Best Practices and Applications covers the fundamentals of building energy modeling and explains how to use modeling to guide design decisions. This is a software-neutral training that enables participants to understand how to integrate modeling into the design process, starting from the programming stage to post-occupancy and measurement and verification (M&V). Particularly, the course will explore modeling principles and tips related to building envelopes, plug loads, lighting systems, and HVAC systems. Finally, Energy Modeling will appropriate methods for presenting results and the appropriate use of modeling throughout the project life cycle and its cost analysis.

The course consists of two online half-day workshops taught by ASHRAE instructors.

Target Audience

This course is designed for energy managers and engineers, building industry professionals, architects, and LEED® accredited professionals. However, Energy Modeling is also available for building operators and facility managers who already have some background in this area and want to learn more about this subject matter.

Learning Path

Energy Modeling Best Practices and Applications is mapped to the **specialized training category** for engineers and project managers along with facility managers and building operators within EMI's suggested [learning paths](#). The **time commitment to course (TCC) is LOW** as it is a course that only runs for one day.


Energy Modeling Best Practices and Applications

Semester(s)	Not offered this fiscal year
Duration	Two half-day sessions (totaling six hours) in a span of one week
Day	Please refer to the course schedule
Time	N/A
Location	N/A
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	6
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting Instructors and staff will actively monitor your attendance and reserve the right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

ASHRAE | Introduction to BACnet®

 BACnet® implementation, testing and certification, BIBBS and interoperability specification

 half-day

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

The Introduction to BACnet® course helps students understand elements required to successfully plan for BACnet implementation, including issues that must be addressed to achieve interoperability. This course will explain what BACnet is and how it works, including the basic components of any multi-vendor or multi-discipline BACnet control system. Of note, the capacity to merge different systems using BACnet, including integrating older systems with BACnet®-based systems, will also be discussed.

The course consists of a three-hour online workshop taught by ASHRAE instructors.

Target Audience

This course is designed for design engineers, energy managers, building operators, facility managers, as well as technicians and architects.

Learning Path

Introduction to BACnet is mapped to the **specialized training category** for design engineers and technicians, as well as building operators and energy managers within EMI's suggested [learning paths](#). The time **commitment to course (TCC)** is **LOW** as it is a course that only runs for half a day.


Introduction to BACnet®

Semester(s)	Not offered this fiscal year
Duration	One half-day session (totaling three hours)
Day	Please refer to the course schedule
Location	N/A
Time	N/A
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	3
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

ASHRAE | Improving Existing Building Operation



HVAC maintenance and optimization, ASHRAE standards, improved management strategies



three days

This cohort is online. Please see the next page for the list of minimum technology requirements.

Course Structure

The Improving Existing Building Operations course offers a well-rounded knowledge of the proper operation and maintenance of existing HVAC systems. The course focuses on the importance of proper operation and maintenance of existing HVAC systems to increase building performance, with a strong emphasis on meeting multiple ASHRAE standards and guidelines (e.g., ASHRAE Standard 100, 105, 14). This training equips attendees with the techniques to assess existing building performance to make their facilities operate more efficiently and economically.

The course consists of three half-day online sessions (totaling 12 hours), taught by ASHRAE Fellows and instructors.

Target Audience

The intended audience for this course includes building operators, facility and energy managers, and design engineers.

Learning Path

Building Operation's is mapped to the **building operations training category** for facility managers and building operators within EMI's suggested [learning paths](#). The time commitment to course (TCC) is **MEDIUM**.

Improving Existing Building Operation

Semester(s)	Not offered this fiscal year
Duration	Three half-day sessions (totaling twelve hours) in a span of one week
Day	Please refer to the course schedule
Time	N/A
Location	N/A
Time Commitment to Course (TCC)	Medium
Renewal Points/Hours	12
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

Instructors and staff will actively monitor your attendance and reserve the right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

ASHRAE | Operations & Maintenance of High-Performance Buildings

 high-performance buildings, energy and maintenance management metrics

 two days

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

The Operations & Maintenance of High-Performance Buildings course offers practical insights regarding the operation and maintenance (O&M) practices for both standard and high-performance buildings. This course discusses the interdependency between energy efficiency and operations & maintenance and provides actionable tips on finding and addressing O&M opportunities.

The course consists of two half-day workshops, including an interactive group project to reinforce concepts such as (1) how to identify and define energy and maintenance management metrics, and (2) how to make the business case for changes to an existing building and its systems.

Target Audience

The intended audience for this course includes building operators, energy and facility managers, and design engineers. Specifically, the course would be most beneficial to staff with three to ten years of experience interested in focusing on O&M for high-performance buildings.

Learning Path

The Operations & Maintenance of High-Performance Buildings course is mapped to the **building operations category** for facility and energy managers, building operators and design engineers within EMI's suggested [learning paths](#). The time commitment to course (TCC) is LOW.

Operations & Maintenance of High-Performance Buildings

Semester(s)	Spring 2025
Duration	Two half-day sessions (totaling six hours) in a span of one week
Day	Please refer to the course schedule
Time	12 - 3pm
Location	Virtual via GoToMeeting
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	6
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

ASHRAE | Air-to-Air Energy Recovery Fundamentals



ASHRAE and AHRI standards, commercially available technologies



half-day

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

Air-to-air energy recovery provides one of the most cost-effective and efficient ways to recycle waste energy and create superior indoor environments. This course introduces recommendations in the latest ASHRAE and AHRI standards, codes and guidelines with respect to air-to-air energy recovery technology to help determine where and when energy recovery is mandated and why. This course also provides a detailed overview of the most popular commercially available technologies on the market today and explores their construction, psychrometrics, thermodynamic theory of operation, and important operations and maintenance considerations for long life and consistent performance.

By the end of the course, participants will be able to better evaluate the performance of these devices and will be able to identify the advantages of each technology to help solve practical problems in meeting ventilation requirements while delivering optimal performance.

Target Audience

This course is open to building operators, facilities management staff, and other relevant energy management staff in City buildings. Engineers, designers and other professionals who are interested in learning all about air-to-air energy recovery and receiving practical guidance on where and when to use different technologies for different applications should also attend this course.

Learning Path

This course is mapped to the **foundational training** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **LOW**.


Air-to-Air Energy Recovery Fundamentals

Semester(s)	Not offered this fiscal year
Duration	One three-hour session
Day	Please refer to the course schedule
Time	N/A
Location	N/A
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	3
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

ASHRAE | Air-to-Air Energy Recovery Applications: Best Practices

 IEQ and energy efficiency, dedicated outdoor air systems (DOAS), practical applications

 half-day

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

Air-to-air energy recovery is a cost-effective and efficient way to recycle waste energy and create superior indoor environments. This course will review real-world examples of where and how air-to-air energy recovery technologies are integrated into some of the most commonly used commercially available systems. Particular configurations that are most commonly used in high-performance buildings and how they can best be used to meet stretch goals for IEQ and energy efficiency and thermal comfort will be examined with respect to established performance metrics, peak performance results and annual energy savings.

A variety of different dedicated outdoor air systems, neutral air systems and enhanced dehumidification strategies (with single and multiple heat exchangers) will be examined in detail, along with the advantages and important considerations for using air-to-air energy recovery in many different applications. Best practices for mechanical design, exchanger selection and control strategies will be discussed throughout.

Target Audience

This course is open to building operators, facilities management staff, and other relevant energy management staff in City buildings.

Learning Path

This course is mapped to the **trades-focused training** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **LOW**.

Air-to-Air Energy Recovery Applications: Best Practices


Semester(s)	Not offered this fiscal year
Duration	One three-hour session
Day	Please refer to the course schedule
Time	N/A
Location	N/A
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	3
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

ASHRAE | Commissioning Process in New / Existing Buildings

 overview of commissioning benefits and specifications

 two days

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

This introductory course focuses on how the building commissioning process can be applied cost-effectively to new construction and to existing facilities, with a strong emphasis on existing facilities applications. In this course, students will learn the fundamentals of the commissioning process through each step of a new construction project from pre-design to occupancy and operations. Students will also learn how the application of the commissioning process in existing facilities differs from new construction.

The course approaches the benefits of commissioning and how the process can improve the built environment, reduce environmental impacts through responsible resource utilization, improve the quality of design and construction, and raise the professional reputation of the entire commissioning team. The course also discusses commissioning documentation, including an overview of commissioning specifications for new construction. Students taking this course will take away compelling information and case studies that demonstrate the value of investing in the commissioning process.

Target Audience

This course is open to building operators, facilities management staff, and other relevant energy management staff in City buildings.

Learning Path

The Commissioning Process in New/Existing Buildings course is mapped to the **building operations category** for facility and energy managers, building operators and design engineers within EMI's suggested [learning paths](#). The time commitment to course (TCC) is LOW.

Commissioning Process in New / Existing Buildings

Semester(s)	Fall 2024
Duration	Two half-day sessions (totaling six hours) in a span of one week
Day	Please refer to the course schedule
Time	12 - 3pm
Location	Virtual via GoToMeeting
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	6
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

ASHRAE | Guideline 36: Best in Class HVAC Control Sequence



HVAC system types, energy efficiency, thermal comfort, and indoor air quality



half-day

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

ASHRAE Guideline 36, High-Performance Sequences of Operation for HVAC Systems, was created to develop and maintain best-in-class standardized HVAC control sequences. This guideline is all about the concept of “less is more.” It allows engineers to reduce engineering time by adapting standard sequences already proven to perform. It minimizes programming and commissioning time for contractors.

ASHRAE Guideline 36 reduces energy consumption, cost, and system downtime with more resilient systems, control sequence compliance, and diagnostic software. The guideline also promotes communication between specifiers, contractors, and operators by creating a language of common terms. The discussion will include the research underlying the current sequences and ongoing and planned future research intended to develop additional advanced sequences for other HVAC system types.

In this course, attendees will learn about the ASHRAE Guideline 36 sequences and how they improve energy efficiency, thermal comfort, and indoor air quality. Attendees will also learn how to specify sequences for this guideline.

Target Audience

This course is open to building operators, facilities management staff, and other relevant energy management staff in City buildings.

Learning Path

This course is mapped to the **trades-focused training** category within EMI's suggested [learning paths](#). The time commitment to course (TCC) is **LOW**.


Guideline 36: Best in Class HVAC Control Sequence


Semester(s)	Spring 2025
Duration	One three-hour session
Day	Please refer to the course schedule
Time	1 - 4pm
Location	Virtual via GoToMeeting
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	3
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

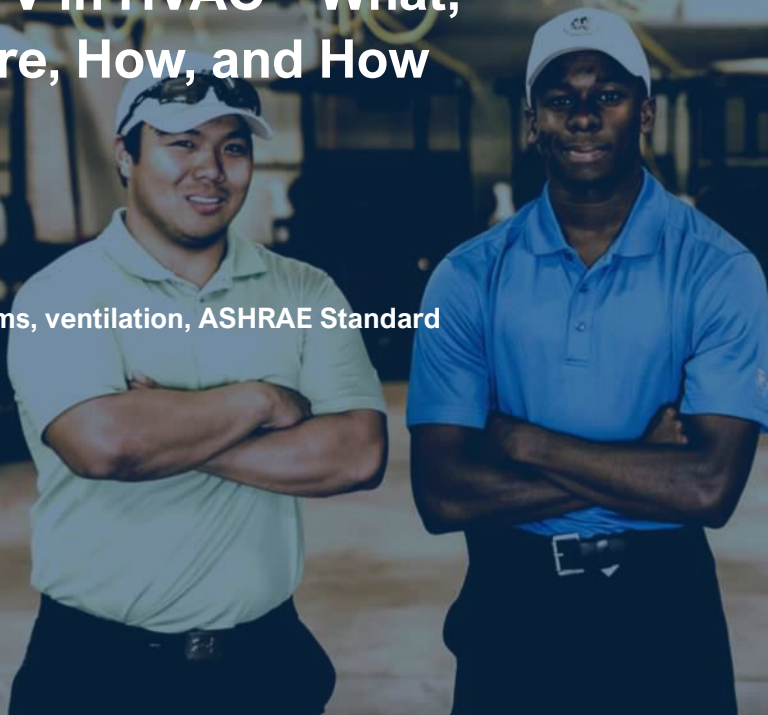
Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

ASHRAE | V in HVAC – What, Why, Where, How, and How Much

 HVAC systems, ventilation, ASHRAE Standard 62.1-2019

 half-day



*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

This course teaches the basics of the ventilation and provides the current concepts behind the new ANSI/ASHRAE Standard 62.1-2019, Ventilation for Acceptable Indoor Air Quality. Ventilation (V) is the third leg in the three-legged stool of HVAC. We need heat (H) to stay warm when it is cold outside, and we like air-conditioning (AC) to keep us cool when it is hot outside. What about V? What is ventilation, why do we ventilate, where does ANSI/ASHRAE Standard 62.1 apply, how must ventilation air be distributed, and how much air do we need? Topics will include minimum requirements for cleaning outdoor air, designing HVAC systems, determining the ventilation rate quantity, commissioning, and operations and maintenance.

This course focuses on the basic requirements of ASHRAE Standard 62.1-2019 and covers the scope, application, and multiple compliance paths available in the standard, including the ventilation rate procedure, indoor air quality procedure, and natural ventilation procedure. Many of the standard's general requirements apply regardless of the procedure used. The different application conditions for the ventilation rate procedure are also described, along with changes particular to the 2019 version of

ANSI/ASHRAE Standard 62.1. This course is highly recommended for all HVAC designers and engineers.

Target Audience

This course is open to building operators, facilities management staff, and other relevant energy management staff in City buildings. .

Learning Path

This course is mapped to the **trades-focused training** category relative to EMI's suggested [learning paths](#). The **time commitment to course (TCC)** is **LOW**.

V in HVAC – What, Why, Where, How, and How Much

Semester(s)	Fall 2024 (DOE only)
Duration	One three-hour session
Day	Please refer to the course schedule
Time	12 - 3pm
Location	Virtual via GoToMeeting
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	3
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

ASHRAE | Introduction to Building Decarbonization

 electrification opportunities, offset strategies

 half-day

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

The Introduction to Building Decarbonization course describes the primary sources for carbon emissions in buildings and explains the key drivers for decarbonization. The course focuses on the framework of decarbonization—including key definitions and distinct scopes that drive sustainable practices. Participants will learn about the complexities of building carbon emissions, including on-site combustion, construction-related sources, and refrigerant leakage. Other covered topics include the principles of building decarbonization, harmonizing occupant well-being, environmental stewardship, and the nature of direct and indirect emissions. The course concludes on the topic of sustainable building innovation—setting a foundation of best practices for a decarbonizing HVAC&R industry.

The course consists of an online three-hour long workshop taught by ASHRAE instructors.

Target Audience

The intended audience for this course includes building operators, facilities management staff, and other relevant energy management staff in City buildings.

Learning Path

The Introduction to Building Decarbonization course mapped to the **specialized training category** for engineers and project managers along with facility managers and building operators within EMI's suggested [learning paths](#). The time commitment to course (TCC) is LOW as it is a course that only runs for one day.

Introduction to Building Decarbonization

Semester(s)	Fall 2024
Duration	One three-hour session
Day	Please refer to the course schedule
Time	12 - 3pm
Location	Virtual via GoToMeeting
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	3
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

ASHRAE | ASH90.1-2022: Starting the Path to Net Zero Buildings



Net Zero Carbon Emission Code, additional efficiency requirements



two days

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

The ASH90.1-2022: Starting the Path to Net Zero Buildings course explores ways that the 2022 edition of 90.1 can reduce energy usage in buildings, and how participants can use these strategies to move toward net zero energy use. The 2022 version of 90.1 begins the Standard's move toward becoming a Net Zero Carbon Emission Code by 2031.

The course consists of two half-day workshops.

Target Audience

The intended audience for this course includes building operators, facilities management staff, and other relevant energy management staff in City buildings.

Learning Path

The ASH90.1-2022: Starting the Path to Net Zero Buildings course mapped to the **specialized training category** for engineers and project managers along with facility managers and building operators within EMI's suggested [learning paths](#). The time commitment to course (TCC) is LOW as it is a course that only runs for one day.

ASH90.1-2022: Starting the Path to Net Zero Buildings

Semester(s)	Not offered this fiscal year
Duration	Two half-day sessions (totaling six hours)
Day	Please refer to the course schedule
Time	N/A
Location	N/A
Time Commitment to Course (TCC)	Low
Renewal Points/Hours	6
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

BOMI-HP® | High Performance Sustainable Buildings

High-performance building investments, market dynamics, resource management concepts, sustainable contracting and vendor management principles

up to 90 hours

This cohort is online. Please see the next page for the list of minimum technology requirements.

Course Structure

The BOMI-HP® Designation program provides learners with an in-depth understanding of how to define, initiate, pay for, complete, and obtain a return on investment for sustainable initiatives within all segments of a building or portfolio. This program meets the growing demand in the marketplace for comprehensive sustainability and energy-efficient programs.

- *Course 1: High-Performance Sustainable Building Principles* provides a comprehensive overview of high-performance sustainable buildings and exposes students to the critical components of sustainability where building systems and the ecosystem intersect. As industry professionals, students will gain insight into understanding and tackling building performance issues that impact local environmental issues and global climate change; integrating high-performance building standards and guidelines; identifying and overcoming the hurdles to achieving true high-performance; and attaining top-to-bottom organizational buy-in for sustainable building initiatives.
- *Course 2: High-Performance Sustainable Building Practices* identifies the critical no-cost

and low-cost sustainable initiatives that every building professional can start implementing now. Throughout this course, students will learn how to effectively optimize and apply sustainable best practices, which cover every aspect of the built environment, to drive operational efficiencies for a high-performance building.

- *Course 3: High-Performance Sustainable Building Investments* delivers the strategies needed for building a business case for high-performance investments. Students will practice bundling social, environmental, and economic factors, fully integrating all facets of the triple bottom line. By leveraging analysis tools such as ROI, NPV, and IRR, students will be equipped to promote and gain buy-in for sustainability and high performance investment projects.

Target Audience

This course is open to all interested City energy management staff and building operators.

Learning Path


This course is mapped to the **specialized training category** for energy and project managers along with facility managers and building operators within EMI's suggested [learning paths](#). The **time commitment to course (TCC) is HIGH**.

BOMI High Performance Sustainable Buildings

Semester(s)	Not offered this fiscal year
Duration	Self-directed over 13 weeks
Day	Please refer to the course schedule
Time	N/A
Location	N/A
Time Commitment to Course (TCC)	High
Renewal Points/Hours	90
Minimum Technology Requirements	Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

Electrification and Building Operations

 electrification best practices and opportunities, maintenance and troubleshooting

 two days

*****This cohort is online. Please see the next page for the list of minimum technology requirements.*****

Course Structure

The Electrification and Building Operations course examines how electrification is increasingly a part of a building operator's responsibility. The course provides an overview of the fundamentals of electrification technologies, including implementation benefits and barriers, as well as maintenance and troubleshooting of key assets and systems. Applicable best practices, standards and incentives that are moving buildings away from the use of fossil fuels and to 100% electric equipment are also reviewed.

The course consists of a two-day workshop and exam.

Target Audience

The intended audience for this course includes building operators, energy and facility managers, and design engineers. Specifically, the course would be most beneficial to staff responsible for implementing sustainable initiatives.

Learning Path

The Electrification and Building Operations course is mapped to the **specialized training category** for engineers and project managers along with facility managers and building operators within EMI's suggested [learning paths](#). The time commitment to course (TCC) is **LOW** as it is a course that only runs for one day.

Electrification and Building Operations

Semester(s)	Fall 2024 and Spring 2025
Duration	Two days (totaling 10 hours)
Day	Please refer to the course schedule
Time	9 - 3pm
Location	24th Floor, Citywide Training Center, 1 Centre Street, New York, NY 10007
Time Commitment to Course (TCC)	Medium
Renewal Points/Hours	7
Minimum Technology Requirements	Webcam (Required) Microphone & Speakers/Headphones OR Headset (Required) Online Broadband (non-secured) bandwidth of 3 Mbps. A wired connection is highly recommended. Complete System Requirements for GoToMeeting

Instructors and staff will actively monitor your attendance and reserve to right to decline issuance of a certificate of completion should virtual attendees not actively participate based on the rules above.

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

LEED Accredited Professional Operations & Maintenance Specialty (LEED AP O+M) | Green Associate and AP Exam Prep

LEED rating system, knowledge domains, USGBC concepts, green building strategies

four days

*****This cohort is fully in-person. Please see the next page for the class location.*****

Course Structure

The LEED Accredited Professional Existing Building Operations & Maintenance (LEED AP O+M) specialty accreditation, a credential offered by the U.S. Green Building Council (USGBC), is geared towards professionals implementing sustainable practices, improving performance, heightening efficiency and reducing environmental impact in existing buildings through enhanced operations and maintenance. **This combined learning pathway provides the exam prep course and examination registration for both the LEED Green Associate (GA) and LEED AP O+M accreditation.**

This learning path comprise two sections:

- **LEED Green Associate prep and exam:** Participants in this course will identify the key components of the LEED Rating System and all Knowledge Domains; recognize the key goals and concept of the USGBC; describe successful green building and LEED strategies; learn the main benefits of sustainability and triple bottom line of “People, Profit, and the Planet,” and receive mock exam question training that will prepare attendees to take the LEED GA exam.
- **LEED AP O+M prep and exam:** Participants in this course will obtain an in-depth overview of the recent changes to the LEED AP exam structure, understand the O+M rating system,

review real life project case studies, and receive mock exam question training that will prepare attendees to take the LEED AP O+M exam.

After each training, EMI will work with each learner to ensure they are registered for the LEED Green Associate and AP Exams through USGBC.

Target Audience

The LEED AP O+M Specialty is open to experienced energy management, building operators, and facilities management staff in City buildings. The LEED Green Associate is a prerequisite to becoming a LEED Associate Professional; learners are expected to take, and pass, the Green Associate first before moving on to the LEED AP exam prep section.

LEED AP Operations & Maintenance (O+M) Specialty Accreditation

Semester(s)	Fall 2024 (Green Associate) and Spring 2025 (AP with Existing Building O+M Specialty)
Duration	Two days of training + two days for exam
Day	Please refer to the course schedule
Time	9 - 5pm
Location	24th Floor, Citywide Training Center, 1 Centre Street, New York, NY 10007
Time Commitment to Course (TCC)	High
Renewal Points/Hours	16 hours

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

Design-Build Institute of America | Design-Build Owner's Bootcamp



performance requirements, effective RFPs, high-performance contracting



three days

*****This cohort is fully in-person. Please see the next page for the class location.*****

Course Structure

This Design-Build training, built specifically for Owners, aims to address the needs and challenges facing new design-build Owners. This bootcamp comprises three parts:

- Performance Requirements: The Key to Effective RFPs. This “hands-on” workshop will walk students through the writing of performance-based requirements.
- Super-Charged Source Selection. This section serves as a primer providing an overview of the two-phase design-build source selection process—the initial down select to identify the most highly qualified firms as well as the final down select to choose the ultimate winner.
- High-Performance Contracting. This section covers design-build contracts, which are written to include approaches such as award fee incentives to promote cooperation, teamwork and collaboration. Combined with the effective use of performance requirements, these “aspirational contracts” help the contracting parties to achieve extraordinary success.

Target Audience

This course is designed for energy engineers and managers, as well as maintenance engineers and managers. However, this course is also available for technical writers, procurement professionals, and others involved in developing and executing energy management projects. Priority is given to AEPs, DEM staff, and others managing energy projects from agencies that have design-build authority.

Design Build Owner's Bootcamp (DBIA Certification Workshop)

Semester(s)	Spring 2025
Duration	Three Days (totaling 21 hours)
Day	Please refer to the course schedule
Time	8 - 3pm, 8 - 5pm, 8 - 3pm
Location	TBD
Time Commitment to Course (TCC)	High
Renewal Points/Hours	21 hours

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

Introduction to Energy Storage for Solar Professionals

 BESS safety, electrical calculations, battery chemistry and performance, imagery databases

 three days

*****This cohort is hybrid, meaning some days are in-person. Please see the next page for the location.*****

Course Structure

This introductory course is designed for solar installers, electricians, and renewable energy developers who plan to incorporate storage into their projects. Topics include Battery Energy Storage Systems (BESS) safety, electrical calculations, battery chemistries, battery performance, and imagery databases such as google earth and helioscope. Additional topics include: overview of BESS technologies and applications, identifying and managing customer expectations, quantifying financial and energy performance, and assessing the project site. This course is eligible for North American Board of Certified Energy Practitioners (NABCEP) credits.

Target Audience

Open to building operators, facilities management staff, and other relevant energy management staff in City buildings who support the installation, maintenance, and monitoring of solar PV and other renewable energy systems.

Learning Path

The Introduction to Energy Storage for Solar Professionals course is mapped to the **specialized training category** for engineers and project managers along with facility managers and building operators within EMI's suggested [learning paths](#). The time commitment to course (TCC) is **MEDIUM** as it is a course that runs for three days.

Introduction to Energy Storage for Solar Professionals

Semester(s)	Fall 2024
Duration	Three Days
Day	Please refer to the course schedule
Time	9 - 4pm
Location	New York City College of Technology 300 Jay St, Brooklyn, NY 11201
Time Commitment to Course (TCC)	High
Renewal Points/Hours	18 hours

*****To enroll, potential students should apply through EMI's [online registration portal](#).*****

Certified Measurement Verification Professionals (CMVP)

 Metrics to measure energy usage, verify savings, and evaluate investments

 three days

*****This cohort is fully in-person. Please see the next page for the class location.*****

Course Structure

The CMVP course focuses on the development of metrics to measure energy usage, verify savings, and evaluate and prioritize investments, ultimately preparing individuals to take the Certified Measurement and Verification Professional (CMVP) exam, which is offered by the Association of Energy Engineers (AEE). Under standard in-person operating conditions, the course consists of a total of three (3) days, split between two (2) days of in-person instructional sessions taught by subject matter experts and one (1) day for the comprehensive certification exam, comprehensive certification exam, administered in-person immediately following the course.

Target Audience

Open to City staff with the following qualifications: (1) BOC-2 Training Certificate of Completion (BOC-2 TCOC) or (2) BOC-1 Training Certificate of Completion (BOC-1 TCOC). Preference will be granted to staff who have their BOC-2 TCOC, as opposed to their BOC-1 TCOC. Students who put forward comparable experience in substitution of the above requirements will be evaluated on a case-by-case basis.

Learning Path

CMVP is mapped to the **AEE certification** category relative to EMI's suggested learning paths. The **time commitment to course (TCC)** is **HIGH** (three full time days plus a four hour certification exam that requires further subject matter study).

Certified Measurement Verification Professionals

Semester(s)	Fall 2024
Duration	Two sessions + one day for the scheduled certification exam
Day	Please refer to the course schedule
Time	8-5pm - Exam: 9-1pm
Location	CUNY School of Professional Studies, 119 W 31st St, New York, NY 10001
Time Commitment to Course (TCC)	High
Renewal Points/Hours	16 hours

Education and Experience Requirements for Certification

Bachelor Degree from an accredited university or college in science, engineering, architecture, business, law, finance, or related field , AND	3+ yrs. experience in energy management projects involving measurement and verification
Registered Professional Engineer (PE) or Registered Architect , AND	3+ yrs. experience in energy management projects involving measurement and verification
Bachelor unrelated degree from an accredited college or university in a field not specified above, AND	5+ yrs. experience in energy management projects involving measurement and verification
2-yr. technical degree, AND	5+ yrs. experience in energy management projects involving measurement and verification
NONE, AND	10+ yrs. experience in energy management projects involving measurement and verification
Current status of Certified Energy Manager (CEM) or Certified Energy Auditor (CEM), AND	1+ yrs. experience in energy management projects involving measurement and verification

To enroll, potential students should apply through EMI's [online registration portal](#).



Important Certification Exam Guidance

Examination scheduling

Participants must take the certification exam on the scheduled date. Participants who apply to retake the course as a “refresher” prior to taking the exam will not be approved by DCAS.

Examination retest

EMI only funds for one round of certification exam, which is included in this course. Participants who fail the exam can retest at their own expense. The retest fee for paper and pencil exams held with live trainings and remote computer-based exams is \$200. For more information, go to retesting at [AEE](#).

BOC Webinars



various topics on energy-efficient building operations



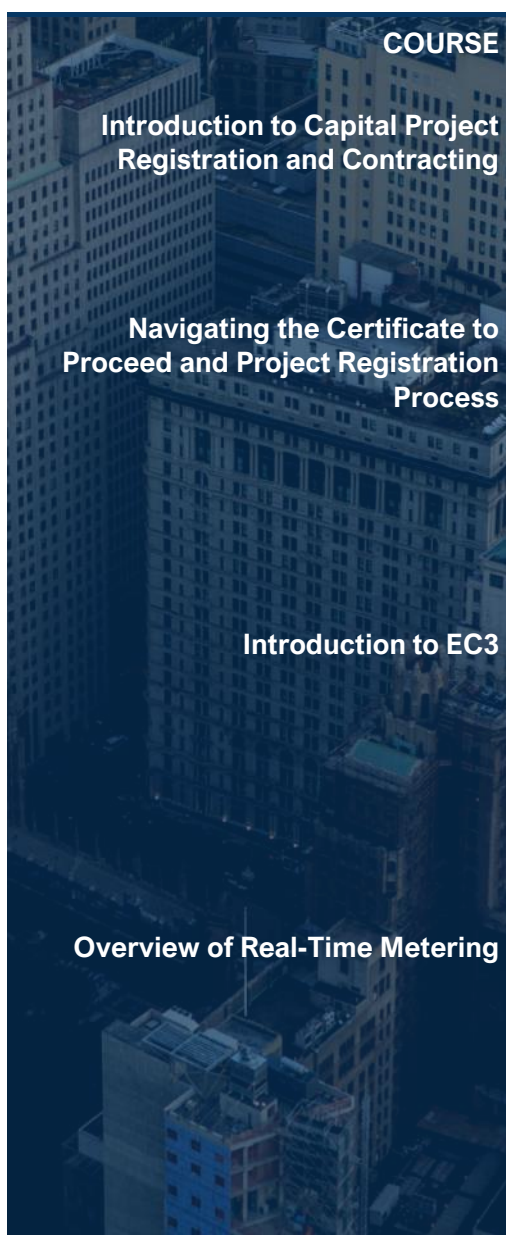
self-paced, on demand

COURSE	BRIEF DESCRIPTION
The Electrification Transformation	<p>This webinar will examine the role of building electrification in the clean energy economy and explore how electrification programs, strategies, and technologies can make an impact in your building. Presenters will highlight an innovative ‘Ecodistrict’ that uses a centralized plant to provide energy to multiple buildings.</p>
Driving Electric Vehicle Charging Infrastructure	<p>As more individual and fleet vehicles become all-electric, the demand for EV charging infrastructure will continue to increase. This webinar will address common challenges and considerations for building operators, managers, and owners as they look to install electric vehicle charging infrastructure at their facilities. Speakers will discuss funding opportunities, best practices, and lessons learned.</p>
HVAC Retrofit Approaches for Savings and Returns	<p>This webinar will introduce the most common and cost-effective HVAC retrofits being implemented in buildings, including those related to reducing the spread of COVID-19 and other viruses.</p>
Heat Pumps: Are They the Right Fit for Your Building?	<p>This webinar will cover aspects building owners and operators should consider before installing heat pumps, including Return on Investment, how heat pumps affect connected building systems and preparing occupants and technicians for the transition.</p>
Emerging Smart Building Technology & Enhanced Building Performance	<p>This webinar will introduce smart buildings technologies and practices that harness building data and controls to optimize performance and enable more efficient, comfortable, and cost-effective operations. Hear from presenters about resources available to help you explore opportunities to make your building smarter.</p>
Exploring the Versatile Applications of Building Automation System (BAS)	<p>This webinar will cover the myriad uses of Building Automation Systems (BAS) and how this technology is transforming the landscape of building operations. From optimizing energy efficiency to ensuring occupant comfort, BAS plays a pivotal role in streamlining operations and enhancing overall building performance. Speakers will provide real-world examples showcasing how BAS can effectively schedule and control diverse building operations.</p>
Benefits of Heat Pumps & Variable Refrigerant Flow Systems	<p>Learn about heat pump and variable refrigerant flow system applications for new and existing buildings and how these technologies can help accelerate the transition to building electrification. Presenters will discuss strategies that can improve the return on investment for these projects and the necessary skill sets for building operators to manage these technologies in their facilities.</p>
Diagnostic Tools 1: Took Kit Stories from BOC Graduates	<p>Hear how three BOC graduates are using diagnostic tools to investigate problems in their buildings. Examples include air flow monitoring to address comfort complaints, logging pump and fan amperage use when doing PM’s, and monitoring pump run time to identify opportunities for water temperature set back.</p>

DEM-offered Energy Training

The following trainings will be offered in-house by the DCAS Division of Energy Management (DEM), with support from CUNY SPS and CUNY BPL, during Learning Fairs or throughout the fiscal year. These courses are offered on-demand and targeted towards Agency Energy Personnel (AEP) and similar support staff.

For more information regarding the schedule and enrollment for these courses, please reach out to DEM's Training team via fachowdhury@dcas.nyc.gov or gguivelondo@dcas.nyc.gov.



COURSE

Introduction to Capital Project Registration and Contracting

Navigating the Certificate to Proceed and Project Registration Process

Introduction to EC3

Overview of Real-Time Metering

BRIEF DESCRIPTION

This session prepares project and energy management staff to successfully navigate the City's capital contracting process to support the implementation and delivery of energy projects. Participants will be able to understand the capital project fundamentals and policies, track the capital project lifecycle, and identify and apply best practices.

This training dives into the two key components of the capital project registration and contracting process: (1) preparation of the certificate to proceed application and (2) project registration. This training enables participants to understand the role of the certificate to proceed (CP) and project registration in the overall capital project development process. In addition, participants will learn how to prepare CP and registration applications using the standardized templates prepared by DEM.

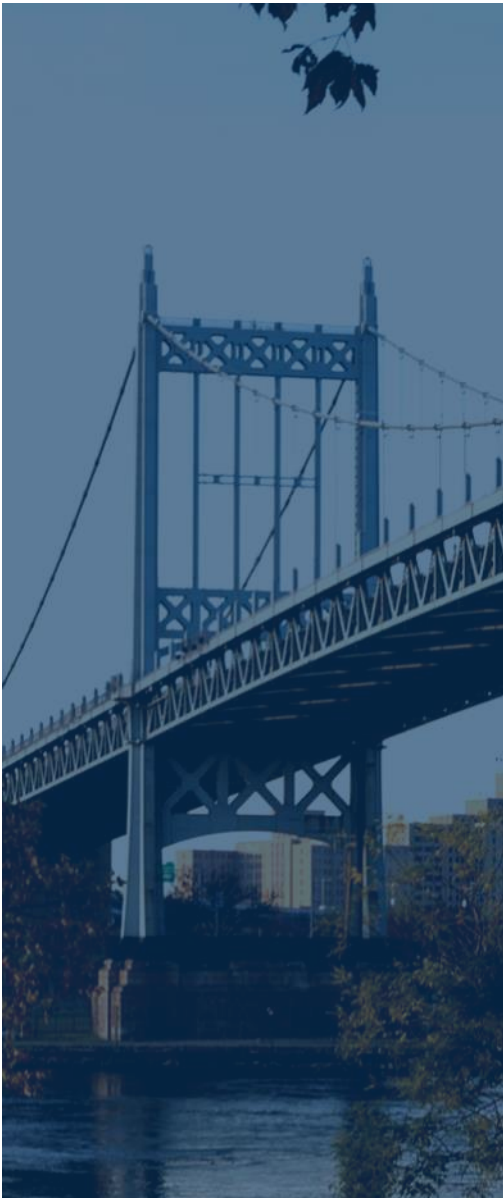
The Introduction to Energy Cost Control and Conservation (EC3) training introduces participants to EC3, a central portal run by DEM to house monthly utility billing data and provide monthly energy usage and cost information for agencies' accounts and facilities. Geared towards facility and agency energy personnel, this training enables students to navigate the EC3 platform, download and manipulate municipal energy reports, and create load profile baselines for their buildings and agencies.

The Overview of Real-Time Metering training introduces participants to EnerTrac, a central portal run by DEM (in collaboration with NuEnergy) that collects, aggregates, and stores energy interval data from real-time meters installed at City buildings. Geared towards facility and agency energy personnel, this session provides a background on real-time metering (RTM) components and a visualization of energy use data. Most importantly, participants will also learn how to take advantage of RTM technology and support their agencies' participation in the Demand Response and Building Re-Tuning efforts.



Other Information to Help You Get Started

Learning Paths / Course Selection



Through EMI, DEM offers a diverse set of courses that enable each participant to design their own learning path. Participants can then maintain their certification or chart their own path by continuing their education through the Learning Fair or other external workshops. Current courses are grouped into **six training categories**: foundational, building operations, AEE certification, building re-tuning, specialized, and trades-focused.

Staff can also select the courses that are right for them based on the following factors:

- **Certification(s) offered:** Some courses offer nationally-recognized certifications, such as BOC-1, BOC-2, CEM, CEA, CBCP and CMVP.
- **Level of in-going expertise:** Some EMI courses require students to have completed specific pre-requisites to ensure that they are prepared to be successful.
- **Breadth of topics covered:** Some EMI courses offer a broad overview of the energy management field, while others focus on specific topics.
- **Time commitment:** Some EMI courses are multi-day, while others are a single day or less. Each EMI course has different requirements for time spent in class for instructor-led learning *and* outside of class to conduct research, develop projects, complete online learning modules or reading assignments, and prepare for exams. The **Time Commitment to Course (TCC)**, which considers time spent in class and outside of class (for projects and self-study), as well as the duration of the course itself, can be classified as **Low, Medium** or **High**: **Low** consists of up to seven hours a week, or, courses that only run for one day, **Medium** consists of up to 10 hours a week, or, courses that only run for one week, **High** consists of up to 15 hours a week over multiple weeks, or, courses that include a certification exam that requires further subject matter study.

The current EMI courses are mapped into six categories below:

	Foundational Training	Building Operations Training	AEE & Other Certification	Trades-Focused Training	Specialized Training	Building Re-Tuning Training
Courses	<p>Fundamentals of Building Systems</p> <p>Introduction to Building Decarbonization</p> <p>Introduction to Measurement and Verification</p>	<p>Building Operator Certification: Level 1 (BOC-1)</p> <p>Building Operator Certification: Level 2 (BOC-2)</p> <p>High-Performance Building Design: Applications and Future Trends</p> <p>Improving Existing Building Operation</p> <p>Operations & Maintenance of High-Performance Buildings</p> <p>Commissioning Process in New/Existing Buildings</p>	<p>Certified Energy Manager (CEM)</p> <p>Certified Energy Auditor (CEA)</p> <p>Certified Measurement & Verification Professional (CMVP)</p> <p>Certified Building Commissioning Professional (CBCP)</p> <p>LEED AP O+M</p> <p>Passive House Designer (CPH/D) Training</p> <p>BOMI High Performance Sustainable Buildings Designation</p>	<p>Foundations of Energy-Efficient Operations</p> <p>Energy-Efficient Controls Systems</p> <p>Passive House Tradesperson (CPH/T) Training</p> <p>Air to Air Energy Recovery Applications: Best Practices</p> <p>Air to Air Energy Recovery Applications: Fundamentals</p> <p>Guideline 36: Best in Class HVAC Control Sequence</p> <p>V in HVAC</p>	<p>Renewable Energy 101</p> <p>Energy Modeling Best Practices and Applications</p> <p>Introduction to BACnet®</p> <p>Retrofit Now! Reducing Carbon and Complying with LL97</p> <p>ASH90.1-2022: Starting the Path to Net Zero Buildings</p> <p>NEEC Electrification and Building Operations</p> <p>Design-Build Owner's Bootcamp</p> <p>Introduction to Passive House Standards</p> <p>Passive House Retrofits</p>	<p>Building Re-Tuning Training and Coaching</p> <p>Advanced Building Re-Tuning Training and Coaching</p>
Target Audience	City staff with minimal building operations or energy experience	Building operators or City energy management staff with a solid working knowledge of building systems and equipment	All interested City energy management staff and building operators who meet necessary experience and educational prerequisites	Tradespeople focused on energy-efficiency, building operations and maintenance	All interested City energy management staff and building operators	All interested City energy management staff and building operators

Some suggested learning paths include the following:

Energy Staff Path

For energy staff with limited building operations experience

- **Foundational Training**
Fundamentals of Building Systems
- **Building Operations Training**
Building Operator Certification Level 1 *and*
Building Operator Certification Level 2
- **AEE Certification**
Certified Energy Manager *or*
Certified Energy Auditor *or*
Certified Measurement & Verification
Professional *or*
Certified Building Commissioning Professional
- **Maintenance of Certification through continuing education**
for example
Measurement and Verification *through EMI* *or*
Blueprint Reading *through the Learning Fair*

Building Operator Path

For building operators and facility managers

- **Building Operations Training**
Building Operator Certification Level 1 *and*
Building Operator Certification Level 2
- **Other Training Categories (LM, Specialized, Trades)**
Building Re-Tuning Training and Coaching
- **AEE Certification**
Certified Energy Manager
- **Maintenance of Certification through continuing education**
for example
Renewable Energy 101 *through EMI* *or*
Boiler Optimization *through the Learning Fair*

Tradesperson Path

For tradespeople and interested building operators

- **Trades-Focused Training**
Energy-Efficient Controls Systems
Foundations of Energy-Efficient Operations
ASHRAE courses
Passive House Tradesperson (CPH/T) Training
OR
- **Building Operations Training**
Building Operator Certification Level 1 (BOC-1)
- **Maintenance of Certification through continuing education**
for example
Renewable Energy 101 *through EMI* *or*
Boiler Optimization *through the Learning Fair*

NYC Energy Tools / Field Equipment Lending Library (FELL)

Through the Energy Management Institute's courses, City of New York staff are also able to learn through hands-on equipment practice with the support of the NYC Energy Tools, formerly the Field Equipment Library ("FELL"). NYC Energy Tools is a shared library of specialized energy diagnostic and measurement equipment that is available to all City staff working on energy management projects in City buildings. NYC Energy Tools is jointly run by DEM and CUNY BPL.

What equipment does this resource have?

NYC Energy Tools is stocked with equipment for measuring, diagnosing, and optimizing a range of building systems and equipment, from boilers to air handling units to solar panels. This resource includes more than 1,200 items, including but not limited to: Digital Light Meters, Thermo-Anemometers, Ultrasonic Meters, Portable Combustion Analyzers, Clamp Meters, HOBO Data Loggers, and Thermal Imaging Cameras. Visit the online library at www.nycenergytools.com.

Where is the NYC Energy Tools located?

NYC Energy Tools is mainly located at 31 Chambers Street, New York, NY 10007. NYC Energy Tools also has another office in 96 Greenwich St New York, NY 10006. It is open from 9:00 am to 5:00 pm Monday-Friday.

How can City staff borrow equipment from the NYC Energy Tools?

City staff can search the library online or download the catalog to identify the equipment that they need. It is recommended to use the [Equipment Checklist](#) when receiving and returning equipment. Through the [online library](#), staff can select the equipment, log in, add equipment to their cart and check out with their project information. If they do not have an account, they should request for one

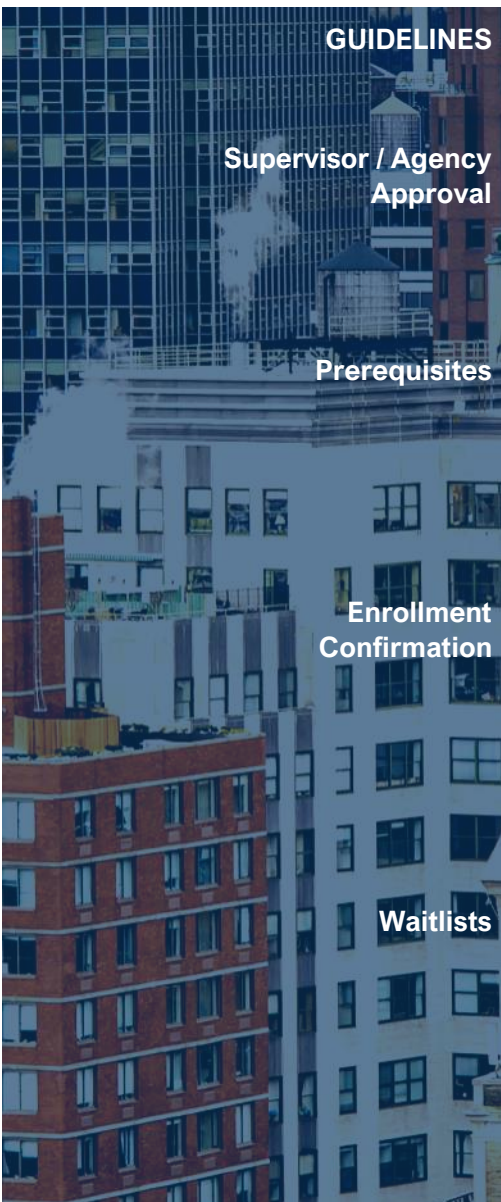
[here](#). For more information, staff can reach out to CUNY BPL Equipment Specialist [Felix Rodriguez](#).

How can City staff learn how to use equipment from NYC Energy Tools?

NYC Energy Tools has a dedicated, full-time equipment specialist on staff to give advice on project design and tool selection; provide equipment training and installation assistance; and offer follow-up and evaluation. Equipment demonstrations are also provided during the Learning Fairs or within specific EMI courses such as BOC-1, BOC-2, and LMTC.

Registration Guidelines

All interested City employees can apply for courses through the [online registration portal](#).



GUIDELINES

Supervisor / Agency Approval

Students must ensure that they have supervisor and/or agency (agency training liaison or HR department) approval before registering for a course. EMI will copy the supervisor on the student's course confirmation to ensure that the supervisor is aware of the learning objectives and time commitment. **Failure to obtain supervisor approval will result in cancellation** of the student's registration.

Prerequisites

Students must confirm that they have completed the course prerequisites. EMI may also check students' enrollment history to determine their eligibility to attend a course.

Enrollment Confirmation

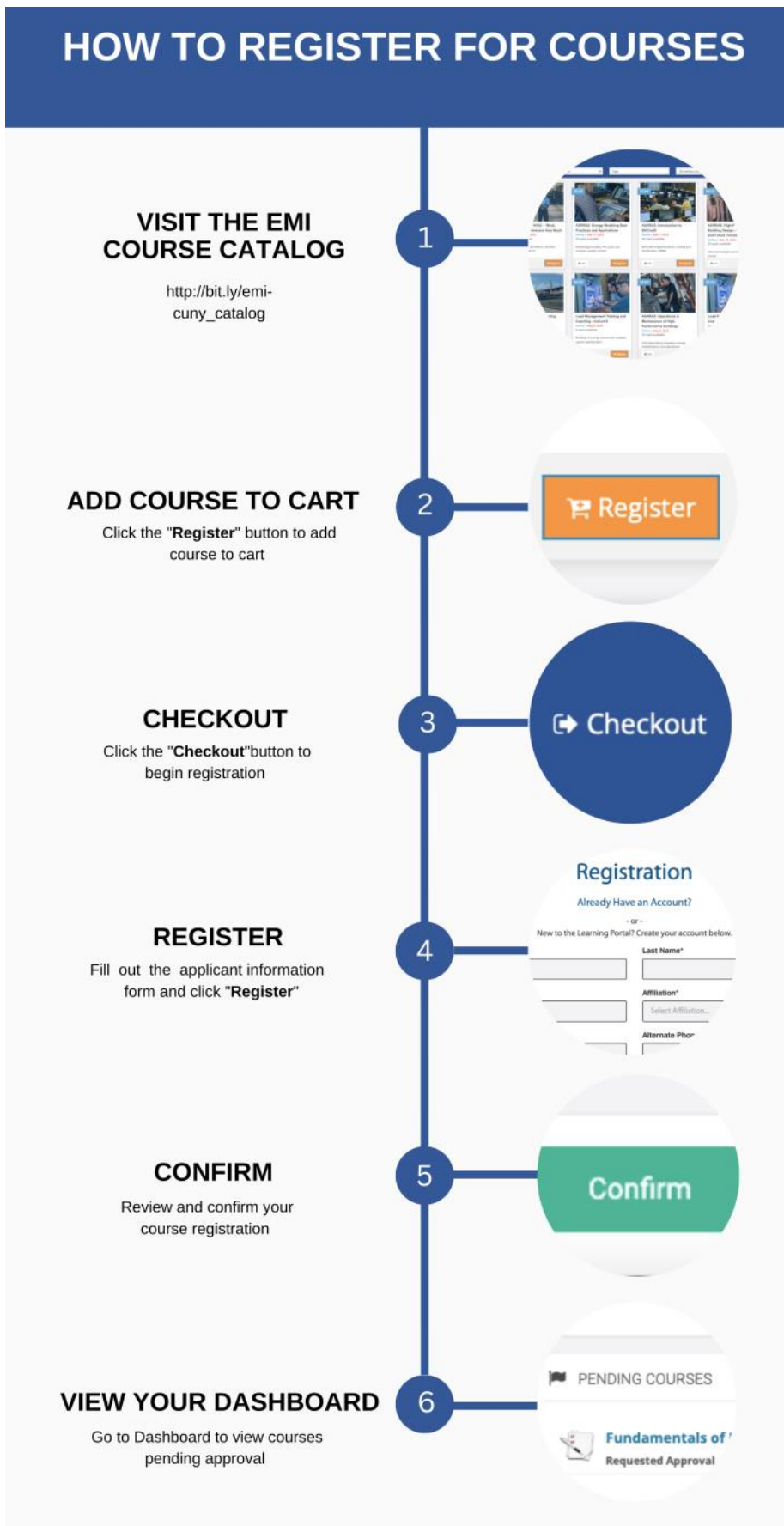
Please note that **students who have successfully submitted their registration are not automatically enrolled in a course**. All classes are free of charge for City employees, and there is a high demand for certain courses. In general, EMI approves student enrollment on first-come, first-served basis, but also considers whether students have completed necessary pre-requisites, history of attendance (esp. re: habitual no-shows), or the course subject matter is relevant to their job. **The EMI team will directly reach out to students who are confirmed** to attend the course with a calendar invite and next steps. Registration is not confirmed until they have received a calendar invite.

Waitlists

If a course is at full capacity, a student can add their name to the waitlist during the registration period. The EMI team uses the waitlist to fill open spaces right before the start of the course. The student will receive an email from the EMI team if they are moved off the waitlist and enrolled in the course.

How to Register for Courses

The main registration page is can be found [here](#). There are six major steps to register for courses. See below for a quick step-by-step process, and next page for in-depth instructions.





OTHER REGISTRATION FLAGS

Cancellation of Online Registration

If you are not able to attend a previously reserved class, please log in to the registration site to cancel your application as soon as possible, so that your vacated spot can be reallocated to a waitlisted applicant. If a City employee registers for an EMI course but drops out before course start, CUNY SPS must receive the request to cancel enrollment in writing at least seven business days before the confirmed start date. Agencies (i.e., supervisors, training liaisons) are strongly recommended to designate a qualified participant for substitution up to the commencement of the class. Failure to do so may result in City employees being unable to enroll for future courses.

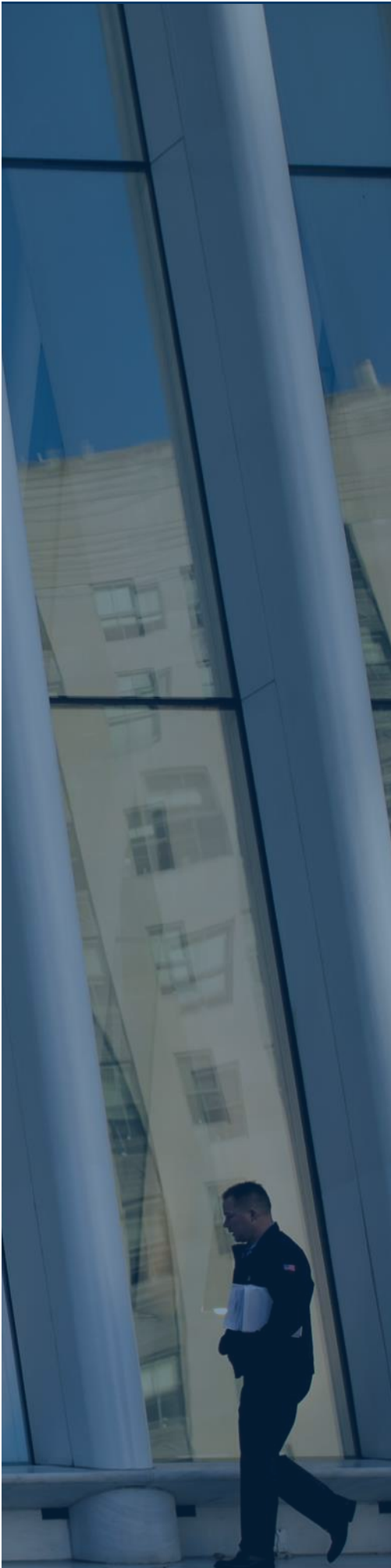
Password Recovery For Returning Students

You may request to reset your password if you are a returning student and do not have access to your previous password. Here's how:

1. On the [learning portal log-in page](#), click on "Recover Password".
2. Input your username, which is always your agency email address, and click on "Request Password".
3. A new system generated password will be sent to your email address.

Error Messages / Additional Help

If you have encountered a learning portal or system error, or, for questions and concerns regarding your online application and waitlist status, please contact EMITraining@sps.cuny.edu.



Appendix: Course Syllabi for Select EMI Courses

Fundamentals of Building Systems | Course Syllabus

This self-paced course is designed to provide foundational energy management knowledge for City staff. It provides an overview of critical building systems and equipment, including their relationship to energy consumption; explains electrical and mechanical engineering concepts pertinent to building operations; and introduces best practices for energy efficiency in City buildings. The **time commitment to course (TCC)** is low.

Module 0 | Course Orientation and pre-assessment

This session provides an overview of the course, NYC and DEM's climate change initiatives and responsibilities, and a high-level discussion on energy efficiency.

- One self-paced intro module
- Pre-assessment

Module 1 to 10 | Self-paced Study // Lab

The participant dedicates this period to self-paced study and completion of assigned online lessons.

- 10 self-paced online lessons (~2.5 hours)

Final Module | Post-assessment and evaluation

This session provides a recap of all completed training and a discussion on overview of codes, zones, regulatory requirements, as well as energy efficiency.

- Post-assessment

Building Operator Certification Level 1 (BOC-1) | Course Syllabus

This course is the foundational energy efficiency course for building operators working in City facilities. The **time commitment to course (TCC)** is high.

Week 1 | Course Orientation

This session introduces the course and provides an overview of topics and projects for the semester.

- 7 hours of online instruction

Week 2 | Building Electrical Systems

This session teaches the basics of electricity and schematics for building electrical systems, as well as general electrical safety concepts.

- 7 hours of online instruction
- 2 self-paced online lessons (~1.5 hours)
- One required reading textbook (~100 pages)

Week 3 | Efficient Lighting Fundamentals

This session focuses on efficient lighting fundamentals and how participants should apply them.

- 7 hours of online instruction
- 2 self-paced online lessons (~2 hours)
- One required reading textbook (~106 pages)

Week 4 | Motors

This session outlines applied motors principles, applied on-site generation and load management.

- 7 hours of online instruction

Week 5 | HVAC: Building Heating & Cooling Loads

This session is dedicated to building loads.

- 7 hours of online instruction
- 2 self-paced online lessons (~2 hours)
- One required reading textbook (~21 pages)
- Module 1 exam
- Module 1 project due

Week 6 | HVAC Systems

This session introduces the analysis of a central plant: boiler, chillers, and HVAC Air System.

- 7 hours of online instruction
- 2 self-paced online lessons (~2 hours)
- One required reading textbook (~147 pages)

Week 7 | Indoor Environmental Quality (1)

The session teaches the fundamentals of applied controls, as well as ventilation and pressure.

- 7 hours of online instruction
- Three required reading textbooks (~166 pages)

Week 8 | Indoor Environmental Quality (2)

This session focuses on basic energy units and conversions as well as reading, accessing, and manipulating energy data through the EC3 portal.

- 7 hours of online instruction
- Module 2 exam
- Module 2 project due

Week 9 | Project Development 1 // No classes

A self-study week dedicated to project development and completion of online lessons assigned.

- 3 self-paced online lessons (~2.5 hours)
- One required reading textbook (~75 pages)

Week 10 | Interpreting Energy Data

This session focuses on applying energy data and provides an introduction to applied energy auditing.

- 7 hours of online instruction

Week 11 | Project Development 2 // No classes

A self-study week dedicated to project development and completion of online lessons assigned.

- 2 self-paced online lessons (~1.5 hours)

Week 12 | Applied Energy Audit

This session discusses an applied energy audit case and low-cost building operational measures.

- 7 hours of online instruction
- Module 3 exam
- Module 3 project due

Week 13 | Project Development 3 // No classes

A self-study week dedicated to project development and completion of online lessons assigned.

- 1 self-paced online lessons (~1 hour)

Week 14 | Maintenance for Performance

This session focuses on applying maintenance for performance and energy calculations.

- 7 hours of online instruction

Week 15 | Project Development 4 // No classes

A self-study week with online instructor support to develop the capstone project.

Week 16 | Capstone Project and Course Evals

This is the last session of the course.

- 7 hours of online instruction
- Module 4 exam
- Final capstone project and presentation due

Building Operator Certification Level 2 (BOC-2) | Course Syllabus

This course is the level 2 for the foundational energy efficiency course for building operators working in City facilities. The time commitment to course (TCC) is high.

Week 1 | Module 1: Best Practices for High Performance Operations & Maintenance

Module 1 will cover:

- Key Performance Indicators for Energy Efficiency
- Building Operating Plan
- Types of Maintenance
- Energy Benchmarking
- Energy Audits & Retro-Commissioning

This session introduces the course and provides an overview of topics and projects for the semester.

Training Day will involve:

- Classroom Training
- Practical Project Introduction

Week 2

Project work week will involve:

- Practical Project Work

Reading Assignments:

- BOC 201: Preventive Maintenance & Troubleshooting Principles
- BOC 214: Building Commissioning

Week 3

Lab session

- Kickoff with Learning Coach
- 1-1 project status meeting with coach
- Online lessons:
- Preventive Maintenance 1
- Preventive Maintenance 2
- Commissioning
- Project work

Week 4

Training Day will involve:

- Classroom Training
- Project work and status check

Week 5

Training Day will involve:

- Classroom Training
- Project Presentation and Submittal
- Exam

Week 6 | Module 2: Sensors, Calibration & Transmitters

Module 2 will cover:

- Sensors
- Transmitters
- Multimeters
- Measurement & Calibration Concepts
- Sensor Calibration Programs
- Pneumatic Upgrades
- Practical Applications
- Point Database

Training Day will involve:

- Classroom Training
- Online lesson - Sensors
- Practical Project Introduction

Week 7

Project work week will involve:

- Practical Project Work

Week 8

Lab session

- Instructor Kickoff session on multimeter and lab day
- Multimeter hands-on lab
- Project work
- 1-1 project status meeting with instructor

Week 9

Training Day will involve:

- Classroom Training
- Project Presentation and Submittal
- Exam

Week 10 | Module 3: HVAC Controls Optimization

Module 3 will cover:

- HVAC Controls
- Troubleshooting
- Guidelines for Controls Sequence of Operations
- Functional Testing
- Control Loop Tuning
- Ladder Diagrams
- Controls Maintenance
- Green Controls Strategies

Training Day will involve:

- Classroom Training
- Online lesson - HVAC Controls Optimization 1
- Practical Project Introduction

Week 11

Project work week will involve:

- Practical Project Work
- Reading Assignments:
- BOC 203: HVAC Troubleshooting and Maintenance
- BOC 204: HVAC Controls Optimization

Week 12

Training Day will involve:

- Classroom Training
- Online lesson - HVAC Controls Optimization 2
- Practical Project

Week 13

Training Day will involve:

- Classroom training
- Project presentation and Submittal
- Exam

Building Operator Certification Level 2 (BOC-2) | Course Syllabus — Continued

• **Week 14 | Module 4: Energy Strategies - Controls Sequence of Operations**

Module 4 will cover:

- Controls Sequence of Operations
- Setpoints
- Modes of Operation
- Creating a Functional Check
- Scheduling
- Energy Efficient Strategies
- Trend Data

Training Day will involve:

- Classroom Training
- Online lessons: Introduction to CSOs
- Practical Project Introduction

Week 15

Project work week will involve:

- Practical Project Work

Week 16

Lab session

- Kickoff with Learning Coach
- 1-1 project status meeting with coach
- Online lessons:
- eLearn – Control Strategies that Save Money - Project work

Week 17

Training Day will involve:

- Classroom Training
- Project work and status check

Week 18

Training Day will involve:

- Classroom Training
- Project Presentation and Submittal
- Exam

Week 19 | Module 5: Electrical Maintenance and Troubleshooting

Module 5 will cover:

- Electrical Distribution, Generators, and Transformers
- Types of Electrical Maintenance Plans
- Power Quality
- Electrical Testing and Maintenance
- Electrical Control Circuits and Wiring
- Electric Safety
- Practical Problems to Overcome in Implementing a Maintenance Plan

Training day will involve:

- Classroom training
- Practical Project Introduction

Week 20

Project work week will involve:

- Practical Project Work

Reading Assignments:

- BOC 202: Advanced Electrical Systems Diagnostics
- BOC 213: Mastering Electric Control Circuits

Week 21

Lab session

- Kickoff with Learning Coach
- 1-1 project status meeting with coach
- Online lessons:
- Electrical Maintenance and Troubleshooting
- Electrical System Monitoring & Maintenance
- Electrical System Diagnostic Technologies
- Project work

Week 22

Training day will involve:

- Classroom training
- Project work and status check

Week 23

Training Day will involve:

- Classroom training
- Practical project presentation and submittal
- Exam

Week 24 | Module 6: Boiler Plant & Hydronic System High Performance O&M

Module 6 will cover:

- Fundamentals
- Boiler Ratings & Efficiency
- Primary (Operational) Energy Conservation Opportunities (ECOs) and Calculations
- Applied (Capital) ECOs
- Techniques for pursuing increases in steam and hydronic (hot water) system efficiency
- Testing and Monitoring

Training Day will involve:

- Classroom Training
- Practical Project Introduction

Week 25

Lab session

- Kickoff with Learning Coach
- 1-1 project status meeting with coach
- Online lessons:
- Boilers & Efficiency
- Steam Distribution Systems
- Hot Water Systems
- Project work

Week 26

Training day will involve:

- Classroom training
- Project work and status check

Building Operator Certification Level 2 (BOC-2) | Course Syllabus — Continued

Week 27

Project work week will involve:

- Practical Project work

Reading Assignments:

- BOC 201: Preventive Maintenance & Troubleshooting Principles
- BOC 213: HVAC Troubleshooting and Maintenance
- BOC 212: Water Efficiency for Building Operators

Week 28

Training day will involve:

- Classroom training
- Practical project presentation and submittal
- Exam

Renewable Energy 101 | Course Syllabus

The Renewable Energy 101 course provides City staff with an introduction to renewable energy technologies in the context of the City's clean energy goals. This introductory course will equip interested employees with the knowledge to advocate for, implement and maintain renewable energy technologies, especially on solar PV. The **time commitment to course (TCC)** is **medium**.

Day 1 | Course Orientation

This session provides participants the opportunity to learn about renewable technologies and policies, solar trends, site selection and planning, codes, inspections, finance mechanisms, and the project approval process. Participants are also introduced to NYC's road map of reaching 100MW of solar by 2025.

- 7 hours of online instruction
- 1 self-paced online lesson

Day 2 | Building Electrical Systems

This session teaches the basics of installation fundamentals, operations, and maintenance for Solar PV, including data acquisition systems and management, design, installation, reports, and troubleshooting.

- 7 hours of online instruction

Day 3 | Innovation in Solar PV

This session outlines the innovations in the solar power field and battery energy storage, reduced carbon, and increased resiliency.

- 7 hours of online instruction

Day 4 | Solar Lab pt. 1

This session focuses on practical exercises and case studies, hands-on activities, and concludes with a workshop about equipment repair and site safety.

- 7 hours of online instruction

Day 5 | Solar Lab pt. 2

This session continues the practical exercises and hands-on activities, and concludes with a rooftop solar installation walkthrough.

- 7 hours of online instruction

Building Re-tuning Training and Coaching | Course Syllabus

The Building Re-tuning Training and Coaching (LMTC) course is designed to provide building operators with hands -on support in implementing Load Management (LM) measures at your buildings to optimize HVAC system efficiencies and find opportunities for energy savings. The **time commitment to course (TCC)** is **medium**.

Week 1 | Course Orientation

This session is dedicated to explaining the Load Management (LM) terms and concepts, Using Enertrac to interpret load profiles, identifying strategies to optimize energy consumption and identifying control loops. The participant learns how to use the HoboMobile and create a load profile baseline.

- 3.5 hours of online instruction

Week 2 | Building Automation System (BAS)

this session teaches students how to identify how to set up and extract trends data from a BAS system or data logger; and how to use trend data to better understand existing control loops.

- 1.45 hours of online instruction
- 1.45 hours of a coaching session

Week 3 | Interpreting Trend Charts

This session focuses on reading and interpreting trend charts for heating, shoulder, and cooling seasons.

- 1.45 hours of online instruction
- 1.45 hours of a coaching session

Week 4 to Week 8 | Coaching Sessions

These coaching sessions provide participants the opportunity to interpret and analyze facility-specific trend charts, investigate building systems, and, with the support of the instructor and DEM's Building Re-tuning Team, identify and implement operational improvements using specific best practices. During session 8, participants learn more about DEM funded programs from representatives, and next steps are established for post-class engagement with the BRTC team.

- 3.5 hours of a coaching session

Certified Energy Manager (CEM) | Course Syllabus

This course enables students to obtain the Certified Energy Manager (CEM) credential by preparing and registering them for the CEM certification exam, offered by the Association of Energy Engineers (AEE). The **time commitment to course (TCC)** is **high**.

Day 1 | Instruments

This session focuses on significant aspects of energy management and audit. The instructor reviews codes and standards and presents how to enhance a green building to high performance.

- 7 hours of online instruction

Day 2 | Accounting

This session presents energy accounting and economics, maintenance and commissioning, and M&V. The instructor also outlines practical aspects of the field, such as electrical power systems, motors, and drives, lighting systems.

- 7 hours of online instruction

Day 3 | Automation and Control

This session reviews characteristics of HVAC Systems, building envelope, automation, and control systems. The instructor offers an overview of thermal energy storage systems.

- 7 hours of online instruction

Day 4 | Energy Savings Performance

This session outlines industrial systems and energy savings performance contracting, measurement, and verification. The instructor reviews particular aspects of boilers, steam, and CHP systems.

- 7 hours of online instruction

Day 5 | Certification Exam

This session concludes the training and holds the proctored certification exam.

- certification exam // scheduling of exam (for the virtual training version)



About CUNY School of Professional Studies

The CUNY School of Professional Studies (CUNY SPS) provides online and on campus programs that meet the needs of adults who are looking to finish a bachelor's degree, earn a master's degree or certificate in a specialized field, advance in the workplace, or change careers.

Drawing on CUNY's nationally and internationally renowned faculty and practitioners, as well as industry and education partners, our programs provide opportunities for personal growth, job mobility, greater civic participation, and new ways to advance knowledge.

Contact: EMltraining@sps.cuny.edu

Location: CUNY School of Professional Studies, 119 West 31st Street, New York, NY, 10001

www.sps.cuny.edu

About CUNY Building Performance Lab

Founded in 2006, the mission of the CUNY Institute for Urban Systems Building Performance Lab is to advance high-performance building operations and practices in existing commercial and public buildings. We focus on improving efficiency and optimizing building operations through continuing education programs for facility managers, building operators, and energy professionals, internships for CUNY students, and building systems research and development.

www.cunybpl.org

About DCAS Division of Energy Management

The New York City Department of Citywide Administrative Services' (DCAS) Division of Energy Management (DEM) serves as the hub for energy management for City government operations. As part of that role, DEM is charged with leading the City's efforts to reduce greenhouse gas (GHG) emissions, with the goal of an 80% reduction by 2050, across the City's built environment. DEM also manages a \$700 million annual energy supply budget and a \$2.7 billion 10-year capital budget to implement energy efficiency projects. Working closely with city agencies, DEM has focused on transforming energy management across the public portfolio of more than 4,000 public buildings by undertaking efforts in four areas: data analysis, behavioral change, energy-efficient operations and maintenance, and energy project implementation.

Today, DEM provides agency partners with nine major types of support to help them transform energy usage in their buildings: (1) Data Analysis (2) Technical Guidance, (3) Strategic Planning, (4) Dedicated Energy Management Staff, (5) Training and Behavioral Change Support, (6) Contracting Resources, (7) Enhanced Operations and Maintenance, (8) Funding for Energy Efficiency Projects, and (9) Funding for Clean Energy Generation Projects.

Contact: energy@dcas.nyc.gov or gguivelondo@dcas.nyc.gov

Location: Department of Citywide Administrative Services, Floor 17, Manhattan Municipal Building, 1 Centre Street, New York, NY 10007.

www.nyc.gov/energy-conservation

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