AEE Hong Kong Chapter
美國能源工程師學會香港分會

The Certified Energy Manager (CEM®) Program for Professional Certification

Course Code:	**CEM /25/ HK**
Hong Kong Date:	**25-28 September 2024** **Live Course** **Venue to be advised**
Hong Kong Time:	**09:00 to 17:30**
Exam Date:	**19 October 2024 (Live Exam)**
Exam Time:	**09:30 – 13:30**
Venue:	**To be advised**
Early Bird Registration Deadline:	**28 August 2024**
Registration Deadline:	**13 September 2024**

THE MARK OF AN ENERGY PROFESSIONAL

Since its inception in 1981, the Certified Energy Manager (CEM®) credential has become widely accepted and used as a measure of professional accomplishment within the energy management field. It has gained industry-wide use as the standard for qualifying energy professionals both in the United States and worldwide. It is recognized by the U.S. Department of Energy, the Office of Federal Energy Management Programs (FEMP), and the U.S. Agency for International Development, as well as by numerous state energy offices, major utilities, corporations and energy service companies. By attaining the status of CEM, you will be joining an elite group of over 10,000 professionals serving industry, business and government throughout the U.S. and in 77 countries. **In particular, the contexts of the latest mandatory Energy Audit Guidelines in Hong Kong will be included in the course.**

COMPREHENSIVE TRAINING PROGRAM FOR ENERGY MANAGERS (prep: CEM Certification)

This is the CEM course (same as the course held in USA). Metric units will be taught in Hong Kong instead of Imperial units in USA. CEM certificates will be issued directly from Association of Energy Engineers (USA Headquarters) after passing the exam with eligibility conditions of experience and qualifications. To obtain further information on the CEM program, please visit the web sites:

USA: aeecenter.org/certified-energy-manager

HK: aee-hkc.hk/course.php

Course & Exam Fee	USD	HKD
A1: Ordinary Applicants	**USD1,280.00**	**HKD10,000**
A2: Early Bird MUST completed the payment on or before early bird deadline	**USD1,220.00**	**HKD9,500**
A3: Pairing 2 candidates or more to submit at the same time	**USD1,220.00**	**HKD9,500**
A4: Early Bird + Pairing	**USD1,160.00**	**HKD9,000**
B1: Re-sit exam (Full Course taken previously)	**USD250.00**	**HKD1,950**

ABOUT THE COURSE

This special in-depth live and/or on-line webinar based course is ideal for professionals who seek a more detailed program of instruction covering the technical, economic and regulatory aspects of effective energy management. The program provides detailed coverage of all of the 26 training sections specified for energy managers in the field, and offers a comprehensive learning and problem-solving forum for those who want a broader understanding of the latest energy cost reduction techniques and strategies.

INSTRUCTORS (Proposed only and may subject to change)

EurIng. Andy Bell is a Chartered Mechanical Engineer, (CEng FIMechE), Chartered Energy Engineer and Chartered Energy Manager, CEM®. He has worked in Asia for over 30 years on railway engineering projects including building the first Platform Screen Doors Systems in the world – originally designed as energy saving systems. He currently works in Singapore as an Independent Energy and Engineering Consultant.

Dr. Harry So has more than 30 years experiences in IT and green technology management. Dr. So has been involved in major consulting and business analysis projects for both the private and public sectors. His clients include Casino, HKEX, HSBC, The World Bank, NTT Data Center, University of Macau, SHKP, Citibank and much more. Dr. So is currently leading the project team for the smart building and smart city solution in the digital twin, energy and AI technology projects. He is also involving develop quality IT building infrastructures, IoT and building technology systems for property developers, hotels, and commercial buildings in BIM based digital twin, AI Energy Modeling and Asset management.

COURSE OUTLINE

ENERGY CODES AND STANDARDS ● Building codes ● ASHRAE standards (135, 189.1, 55 & 62.1) ● Energy codes ● Federal legislation ● IAQ	**ENERGY AUDIT** ● Energy audit types ● Benchmarking & levels ● Load factor ● Energy balance ● Regression model	**ENERGY AUDIT INSTRUMENTATION** ● Audit tools ● Light level meters ● Electric meters: voltages, current, power, energy, power factor ● Temperature-measuring instruments ● Combustion efficiency measurement ● Air flow and air leak measurement ● Thermography ● Ultrasonic leak detectors ● Data loggers ● Mobile phone apps
ELECTRIC RATE, TARIFFS AND SUPPLY OPTIONS ● The difference between power and energy ● Electric meters ● Components of electric rates ● Natural gas ● Factors in controlling electric costs ● Electrical tariffs ● Demand side management	**BOILERS AND STEAM SYSTEMS** ● Boilers ● Combustion process ● Combustion efficiency ● Economizer ● Steam ● Steam traps ● Boiler blowdown ● Example of boiler improvement	**MOTORS AND DRIVES** ● Affinity laws ● How motors work ● High-efficiency motors ● Motor efficiency ● Variable speed drives ● Variable frequency drives ● Variable volume options/drives
HIGH PERFORMANCE GREEN BUILDINGS ● Introduction to sustainability ● The USGBC and the LEED rating systems for (NC), (EB) ● EPA ENERGY STAR program and Portfolio Manager ● Benefits to the community, owners, and occupants	**ENERGY ACCOUNTING AND ECONOMICS** ● Key financial metrices ● Economic analysis ● Life cycle cost ● Retrofit examples ● Different equipment lives ● Cash flow	**OPERATION, MAINTENANCE & COMMISSIONING** ● Infrared analysis ● Vibration analysis ● Lubricant analysis ● Compressed air leaks ● Insulation or thermal losses ● Steam leaks ● Lighting ● Commissioning introduction
BUILDING ENVELOPE ● Heat gain / heat loss ● Infiltration ● Heat conduction and convection ● Insulation materials ● V-value ● Degree days ● Window & roof ● SRI	**LOCAL TOPICS AND OPPORTUNITIES** ● US Tax benefits ● 179 d ● Examples for non-taxpaying entity ● Examples for private building	**ELECTRICAL POWER SYSTEMS** ● Single phase and three-phase ● Power factor ● Power factor correction ● Power quality ● Harmonics

DISTRIBUTED GENERATION & RENEWABLE ENERGY SYSTEMS ● Combined heat & power (CHP) ● Cogeneration ● Fuel cells ● Renewable energy ● Capacity factor ● Solar power ● Photo voltaic (PV) panels ● Wind turbines ● Net metering	**HVAC SYSTEMS** ● Types of HVAC systems and new technologies ● The vapor-compression cycle ● COPs and EERs ● IPLV ● Air conditioning loads + equipment ● Chillers ● Refrigerants ● Air-side systems ● Chilled beams ● HVAC process ● Psychrometric chart	**BUILDING AUTOMATION, CONTROLS AND ARTIFICIAL INTELLIGENCE SYSTEMS** ● Control type ● PPC ● BAS ● Water resets ● AI in buildings ● AI & 10T
INDUSTRIAL SYSTEMS ● Pumps ● Fans ● Compressed air ● Leaks ● Gas turbines ● Steam turbines ● Waste heat recovery ● Heat exchangers	**LIGHTING** ● Basics of lighting and current lighting technologies ● New lighting technologies ● Economic evaluation of example lighting improvements ● Quality ● Efficacy ● Ballast ● Light sources ● Controls ● Lumen method	**ENERGY SAVINGS PERFORMANCE CONTRACTING AND MEASUREMENT & VERIFICATION** ● Financing ● Performance contracting ● M & V **ENERGY STORAGE SYSTEMS** ● Thermal storage ● Off-peak times ● Load levelling ● Ice storage tank ● Battery storage

Examination Requirement

All CEM candidates must satisfactorily complete a **four-hour** written open-book exam which contains 130 multiple choice questions, proctored by an approved exam administrator. There are 15 sections and all are compulsory.

1. Energy Accounting and Economics
2. Energy Audits and Instrumentation
3. Electrical Systems
4. HVAC Systems
5. Motors and Drives
6. Industrial Systems
7. Building Envelope
8. CHP and Renewable Energy Systems
9. Building Automation Systems
10. Control Systems
11. Thermal Energy Storage Systems
12. Lighting Systems
13. Boiler and Steam Systems
14. Maintenance & Commissioning
15. Financing, Performance Contracts and M & V.

Eligibility

The prerequisites to qualify for the certification process have been designed to take into account the possible diversity of education and practical experience an individual may have. However each CEM candidate must meet one of the following criteria with the pass of exam:

Education	Work Experience
4-year engineering/architectural degree OR Professional Engineer (PE) OR Registered Architect (RA)**	AND 3+ Years related* experience
4-year degree in technology, environmental science, physics, or earth science**	AND 4+ years related* experience
4-year degree in business (or related field)**	AND 5+ years related* experience
2-year energy management associate degree**	AND 6+ years related* experience
2-year associate degree**	AND 8+ years related* experience
NONE	AND 10+ years related* experience

Application forms will be distributed the students after the course/exam for the CEM certification.

Conditions

1. **All candidates should firstly email the form for registration and pay for seat confirmation.**
2. **Every effort will keep the course date unchanged. However, all candidates will be informed well in advance should there be any change of course date due to venue booking and other reasons.**
3. **The course contents may subject to change in accordance with the instructor(s).**
4. **The organizer reserves the right to cancel the course should there be insufficient candidates or other reasons. Course fee will then be refunded 100%.**
5. **All exam passed candidates will enjoy 1-year free AEE membership and a CEM certificates if he/she fulfils the above eligibility requirement.**
6. **When the course is confirmed, a workbook materials link for download will be forwarded to you for your own print out for the course and exam usage.**

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Registration

Early Bird Deadline: 28 August 2024
Course Registration Deadline: 13 September 2024
(First come first served, application may early close if class size reaches 40)

To register, please click here complete the application form.

Payment Method

If you are in Hong Kong, you can select one of the followings payment methods: --
Direct deposit or ATM transfer to

"**AEE Hong Kong Chapter Limited" HSBC Account no. 614-054229-838.**

(Before you upload the bank slip through a google form. Please make sure to write down your full name on the bank slip and the file name is your **FULL name**)

If you are oversea candidates, we accept U.S. dollars ONLY and select one of the followings payment methods: --

All bank charges must be paid by the candidates

Direct Deposit to "**AEE Hong Kong Chapter Limited" HSBC Account no. 614-054229-838.**

Telegraphic Transfer (If you pay by Telegraphic Transfer, please contact Fiona aeefiona@gmail.com for bank account information and proper procedures.

If you have any queries about the registration, please don't hesitate to contact Fiona Lok at **(852) 9211 2547** Whatsapp.

If you have any questions regarding the payment method or registration, please do not hesitate to contact Fiona via email at aeefiona@gmail.com or WhatsApp at 852 9211 2547