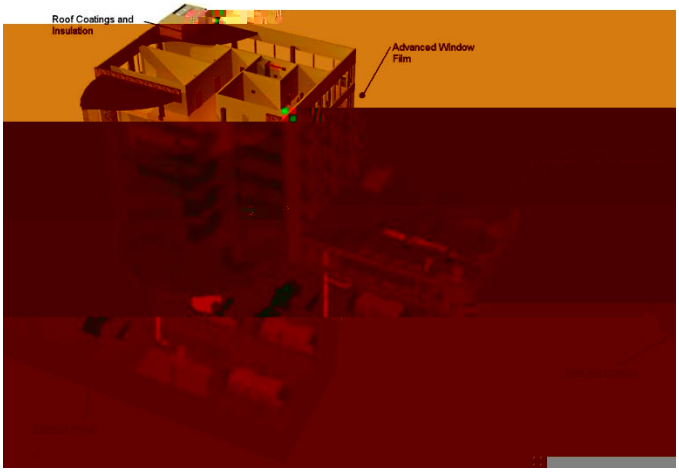
Energy Engineering for E&M System Course

The course is specially designed for those who want to widen and deepen their knowledge with the fundamental principles, skills and guidelines needed to carry out effective energy audits in accordance with the Building Energy Efficiency Best Practices. After taking the course, the participants would appreciate the approach to identify energy saving measures and perform quantitative analysis to predict the energy savings, environmental and economic benefits. Moreover, the participants should be able to measure and verify the performance of implemented energy saving.



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Introduction to the Buildings Energy Efficiency Ordinance (BEEO) /Best Practices

- Legislative Framework
- Requirements of Energy Audit
- Qualification and Duties of Registered Energy Assessors (REAs)

Energy Audit

- : (EMOs)

Management procedures for energy audit: walk-through inspection, detailed energy audit and identification of energy management opportunities (EMOs).

Energy Saving Measurement and Verification (M&V) Methods

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International Performance Measurement & Verification Protocol; instrumentation and measurement techniques; baseline adjustment; error and uncertainty analysis; third-party verification.

- **(HVAC)**

Heating Ventilating and Air-Conditioning (HVAC)

- ; (COP)

Measurements and evaluation of energy efficiency of chillers, water-side systems and air-side systems; coefficient of performance (COP) analysis.

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Provision of thermal comfort and good indoor air quality in an energy-efficient manner.

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(OTTV)

Qualitative analyses of effective energy management opportunities for HVAC systems, including temperature settings for chilled water supply and indoor air, building envelops meeting the overall thermal transfer value (OTTV) requirements, evaporative cooled condensers, variable-speed pumps, automatic cleaning devices for seawater cooled condensers, Fresh air intake control and more.

- **Electrical Systems and Power Quality Improvement**

- Energy efficiency for electrical distribution systems, including transformers and wires.

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Procedures of measuring and improving power quality for buildings due to low power factor and/or high harmonics (typically caused by electronic equipment).

- Experimental tests suitable for evaluating energy use of electrical systems and for identifying any power quality problems.

- Calculation of energy and cost savings due to improvement in electrical systems performance and power quality.

- **Lift and Escalator**

- Maximum allowable electrical power requirements.
- Energy consumption measurements of lift and escalator Systems.
- Total harmonic distortion and power factor of motor drive systems.
- Energy efficient designs.

Lighting Systems

- Photometry and light measurements.

- Incandescent lamps, fluorescent lamps, electromagnetic ballasts, high-frequency electronic ballasts, light-emitting diode (LED).

E & M Engineers and Building Services professionals

Medium of Instruction

Delivered in Cantonese with notes mainly in English

Venue for Enrollment

O 2

SLA, 2/F Block O, Macau University of Science and Technology, Avenida Wai Long, Taipa, Macau

Venue for Class

Macau University of Science and Technology, Avenida Wai Long, Taipa, Macau
(Classroom number will be notified after the course is confirmed to commence.)

Course Date & Time

Course

Tuition Fee MOP5,500 **Class Size** 30

*** Enrollment Notes ***

(9:00 - 20:00) (9:00 - 13:00) [ ]

1. https://scs.must.edu.mo/oasc/PersonalInfo.do

QR Code <>

For those who enroll for our courses for the first time, please go to https://scs.must.edu.mo/oasc/PersonalInfo.do or scan the QR Code below, choose the category of <**Engineering**>, and input personal information (no need to upload ID copy). After registration online successfully, please come to our school to make payment. You should bring along with your ID card and copy.

2. / / **5,000**

Tuition fee and materials fee (if any) should be paid by cash or by cheque/Cashier Order (For cheque payment, please contact SLA colleague). C**ash is accepted for payment of not more than MOP5,000.**

3. All payment made is not refundable (except that the course is cancelled by the School) or transferable.

4. The School reserves the right to cancel or postpone the courses if minimum class size is not reached.

Enquiries

Tel: 8796 1998 Email: sla@must.edu.mo

Website: http://www.must.edu.mo/sla/diploma-certificate-programs

sla@must.edu.mo

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The School of Liberal Arts develops life-long learning opportunities. Should you wish to receive information on our programs / courses, please send us an email (to sla@must.edu.mo) stating your email address in your email and “Join the mailing list” in the Subject line.

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We also offer in-house training for corporations/Government Departments/schools, tailor-made with respect to your choices of topics, time, place, and group of attendees. Please contact us for more information.