"Design, Construction and Maintenance of Swales and Buffer Strips”

organized by IES

Date : 13 July 2012 (Friday)
Time : 8.30 am – 6.00 pm
Venue : 80 Toh Guan Road East, Singapore 608575 – To Be Confirmed
Fee : $290 - IES member, SIA member, SILA member
       $360 - Non-member
CPD : PDU / PDU (QECP) / CPD – To Be Confirmed
Two-thirds of Singapore functions as local catchment areas. Under the Active, Beautiful, Clean Waters (ABC Waters) Programme, PUB has embarked on a journey to harness the full potential of our waters by integrating them with our environment. Over the past 2 to 3 years, other public agencies and private developers have also embraced the ABC Waters design that leads to improvement in water quality, enhanced biodiversity and new recreational space for people to get closer to water.

With more ABC Waters projects, there is a need to ensure that suitably qualified Engineers/Architects/Landscape Architects are on board to undertake the designs of such water features. IES is collaborating with PUB and other agencies to introduce the ABC Waters Professional Programme. The programme is aimed at building up the expertise in the area of ABC Waters design and increase the competitiveness of professionals in the Singapore market as well as within the region.

The objective of the Programme is to create awareness of ABC Waters design concept and its application in Singapore amongst professionals in the industry and to train professionals in the design, implementation and maintenance of ABC Waters Design features. Four core modules (CU1 to CU 4) and four elective modules (EU 1 to EU 4) are offered under the ABC Waters Professional programme. Core Modules CU1 to CU4 and Elective Modules EU1 to EU4 are conducted from Sep 2011 to second quarter 2012.

Participants who complete all four core modules plus any two elective modules would be eligible to be registered as an ABC Waters Professional. Participants who complete any single module would receive certificate of attendance for the module completed.

It is envisaged that in the near term, the ABC Waters Professional certification may be a requirement for development proposals involving ABC Waters design features.

Supported by:

- PUB
- HOUSING & DEVELOPMENT BOARD
- Land Transport Authority
- NATIONAL PARKS
- SINGAPORE INSTITUTE OF ARCHITECTS
- SILA
Course Outline for Core Module CU3

1) Overview of Swale (Dr Ma Cheng Yi Lydia – 1/2 hour)
   a) Understanding ABC Waters Design features as applied to housing development, parks and streetscape
   b) Overall ABC Waters Design and storm water quality management

2) Landscape design of Swale (Dr Ma Cheng Yi Lydia – 1 hour)
   a) Swale in Urbanized landscape
   b) Plant selection and common species used

3) Engineering Design of Swale (Dr May Chui and Dr S H Chew – 4 hours)
   a) Engineering design consideration – Hydraulic and other considerations
      • Hydrologic and hydraulic design objectives
      • Surface and near-surface hydrology
   b) Vegetation and Soil considerations
   c) Step-by-step Design Process – detailed design consideration and calculation

4) Construction consideration and Maintenance – (Dr S H Chew – 1/2 hour)

5) Case Study on Swales and Buffer Strips (Dr S H Chew - 1 hour lecture)

6) MCQ Exam – 1 hour
Speaker Profile

Er Dr Chew Soon Hoe

Dr Chew Soon Hoe received his PhD from University of California at Berkeley. He is currently an Assistant Professor in the Department of CE, NUS, and also holds the position of Deputy Director of the Centre for Protective Technology, NUS. His research interests include geosynthetics, slope engineering, land reclamation, soil improvement, soil erosion, numerical modeling in geotechnical engineering and geo-environmental engineering. In the past 15 years, he has conducted extensive research on geosynthetics, especially on the reinforcement, filtration and drainage applications of geosynthetics material. His other research interests include survivability of geotextiles, geosynthetics for erosion control, vertical drains testing and applications. He has been very actively promoting the use of geosynthetics in civil engineering construction, and has been engaged as consultant to government agencies and private consultants and contractors on geosynthetics related projects and construction in this region. He is also actively consulted in general area of geotechnical engineering including slope stability, pile foundation and excavation related problem.

Dr May Chui Ting Fong

Dr Chui Ting Fong May is an assistant professor in the Department of Civil and Environmental Engineering at National University of Singapore. She received her PhD in environmental fluid mechanics and hydrology from Stanford University. She has been studying and modeling hydrologic processes such as groundwater surface-water interactions for a number of years. She has also been working in the field of ecohydrology, researching the coupled dynamics between hydrology and vegetation. She is currently investigating the impact of sewer leaks on both subsurface and surface water quality, as well as the feasibility of creating eco-friendly flow regimes in urbanized canals. Her teaching areas include hydraulics, water resources engineering and groundwater hydrology.

Dr Ma Cheng Yi Lydia

Dr Ma Cheng Yi Lydia is the Deputy Unit Head of Landscape Unit in Housing & Development Board (HDB), which oversees the landscape design in new housing estates as well as estates undergoing upgrading. She received her PhD in landscape architecture from Edinburgh College of Art/Heriot-Watt University in Scotland. Her research on theoretical principles of landscape architecture is the key for her to guide the consultants in achieving quality landscape design. Since she joined HDB in 2007, she has been actively practicing ABC waters design approach. She initiated the design of vegetated swale drainage for the park of Greenwood Sanctuary @ Admiralty, which was awarded the Inaugural ABC Waters Certificate for completed project.

Dr Lydia has participated in PUB’s pilot rain garden in HDB’s Balam Estate. She has been equipped to design bioretention swale by PUB’s consultant, Pro Tony Wong, through the workshops and the pilot projects done in Balam Estate and Sengkang. Her first bioretention design was constructed in Dawson as a pilot project accommodating tree planting between bioretention swales. She is devoted in promoting quality landscape in public housing through the creation of an environmental-friendly and sustainable green home for people to live, work and play.
ABC Waters Professionals
Core Module CU 3

Core Module CU1: Understanding ABC Waters Design Guidelines and Certification – 28 Jun 2012 (second-run)
Duration: 8 hours including lectures, case studies and MCQ exam
Competency Areas
• Understand ABC Waters Management Strategies;
• An overview on planning, design and performance considerations for ABC Waters Management including:
  a. Catchment Elements
  b. Treatment Elements
  c. Collection & Storage Elements
• Understand Safety Considerations, Public Heath & Maintenance
• Understand Multi-disciplinary nature of ABC Waters Management
• ABC Waters Certification Scheme

Core Module CU2: - 29-30 June 2012 (second-run)
Stormwater Quality Management - Planning and Designing ABC Waters Design features
Duration: 11 hours including lectures, case studies and MCQ exam
Competency Areas
• Appreciate ABC Waters Design
• Understand Storm Water Quality Parameters including the following:
  a. Suspended Solids
  b. Nutrients
  c. Litter
  d. Metals
• Formulate Stormwater Management Strategy
• Appreciate Sizing Stormwater Treatment Systems
• Introduction to Model for Urban Stormwater Improvement Conceptualization (MUSIC)
• Understand ABC Waters Design features including the following:
  a. Sedimentation Basins
  b. Swale/Buffer systems
  c. Bioretention Swales
  d. Bioretention Basins
  e. Cleansing biotopes
  f. Bio-engineering
  g. Constructed Wetlands

Core Module CU3: Design, Construction and Maintenance of Swales and Buffer Strips – 13 July 2012 (second run)
Competency Areas:
• Understand design considerations for swales
• Able to produce suitable design for swales
• Able to provide construction advice for swales
• Knows the maintenance requirements for swales
• Case Example

Core Module CU4: Design, Construction and Maintenance of Bioretention Basins and Bioretention Swales – to be confirmed
Competency Areas:
• Understand design con
• Considerations for bioretention basins and bioretention swales
• Produce a suitable design for bioretention basins and bioretention swales
• Preparing and testing of soil media
• Sub-soil drainage system
• Plant selection
• Provide construction advice for bioretention basins and bioretention swales
• Appreciate the maintenance requirements for bioretention basins and bioretention swales
• Case example
## Elective Module EU1: Design, Construction and Maintenance of Sedimentation Basins - to be confirmed

Duration: 8 hours including lectures and Case Studies and MCQ exam

**Competency Areas:**
- Understand design considerations for sedimentation basin
- Produce suitable design for sedimentation basin
- Apply construction advice for building sedimentation basin
- Appreciate the maintenance requirements for sedimentation basin
- Case example

## Elective Module EU2: - to be confirmed

**Design, Construction and Maintenance of Cleansing Biotopes**

**Bio-Engineering: Design Processes and Implementation Techniques**

Duration: 8 hours including lectures and Case Studies and MCQ exam

**Competency Areas:**
- Understand design considerations for Cleansing Biotopes
- Able to produce suitable design for Cleansing Biotopes
- Able to provide construction advice for Cleansing Biotopes
- Knows the maintenance requirements for Cleansing Biotopes
- Case example

**Bio-Engineering: Design Processes and Implementation Techniques**

**Competency Areas:**
- Understand design process for Bio-Engineering
- Understand design techniques for Bio-Engineering
- Provide construction advice for Bio-Engineering
- Appreciate the maintenance requirements for Bio-Engineering
- Case example

## Elective Module EU3: Design, Construction and Maintenance of Constructed Wetlands – to be confirmed

Duration: 8 hours including lectures and Case Studies and MCQ exam

**Competency Areas:**
- Understand design considerations for Constructed Wetlands
- Produce suitable design for Constructed Wetlands
- Plant selection
- Provide construction advice for Constructed Wetlands
- Appreciate the maintenance requirements for Constructed Wetlands
- Case example

## Elective Module EU4: Slope Stability and Channel Design – to be confirmed
ABC Waters Professionals
Core Module CU 3

Registration Form

ABC WATERS PROFESSIONALS CORE MODULE CU3
Design, Construction and Maintenance of Swales and Buffer Strips

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Time : 8.30 am – 6.00 pm (Friday)
Venue : 80 Toh Guan Road East, Singapore 608575 – To Be Confirmed
Fees * : $290.00 (IES/SIA/SILA Members) $360.00 (Non-Members)

Please register online/fax the completed form by 20 June 2012 before 3pm to:
Rasheedah Goh- IES Academy 70 Bukit Tinggi Road S(289758) Tel: 6463 9211        Fax: 6463 9468

Participant Details

Name: __________________________________________ NRIC: _______________________

Company : ____________________________________ Designation: ______________

Address 1 : ____________________________________________________________________________
(For mailing of invoice and receipt)

Address 2 : ____________________________________________________________________________
(For mailing of Certificate)

Postal Code : _______________________________ Sex : _______ Male / Female______

Mobile No. : ________________________________ Fax : ________________________________

Email : ____________________________________________
(For sending of confirmation email)

Please indicate : ☐ IES/SIA/SILA members IES/SIA/SILA M’ship No.: ______________ PEB/BOA No.: __________ (if applicable)
☐ Non-members ☐ Sponsored by company ☐ Vegetarian

Contact Person Details (if different from participant)

Name : ______________________________________ Designation: ________________________

Tel : __________________________________________ Fax: ______________________________

Email : __________________________________________

Payment Details

Bank / Cheque No.: _______________ Amount ($): ______________

* All Fees are inclusive of 7% GST. Cheque should be made payable to: “IES”.

Acceptance of Terms and Conditions for Registrations of IES Academy’s Events

I agree to abide by the Terms and Conditions for Registration of IES Academy’s Events.

Name : ___________ Signature: ______________
TERMS & CONDITIONS COURSE REGISTRATION

Registration

Registration can be done either online or by faxing in the registration form.

Any registration, whether on-line or fax will be on a first-come-first-served basis and will only be confirmed upon receipt of full payment by The Institution of Engineers, Singapore (IES).

Email and phone registrations will not be accepted.

Closing Date & Payment

The closing date of the event will be 7 days prior to event commencement date. Cheques should be crossed ‘A/C payee only’ and made payable to ‘IES’, with the Date of event, Title of The Event and participants’ name indicated clearly on the back of the cheque, and post to:

IES Academy
70 Bukit Tinggi Road
Singapore 289758

Confirmation of Registration

Confirmation of registration will be given 7 days prior to the commencement date of event via email. If you do not receive the said confirmation email, you are required to contact IESA general admin immediately at 6463 9211 (office).

IESA reserves the right to allow only confirmed and paid registrants to attend the Event.

Withdrawals/Refunds of Fees

Notice of withdrawal must be given in writing to IESA. Policy on refund of course fee is as follows:

- FULL refund if we receive your written notice of withdrawal at least 7 days before the commencement of the Event.
- NO refund otherwise.

No show of participant would not be accepted as reason for withdrawal/refund.

Replacement is allowed but restricted to once only. Replacement will be allowed only if written notice is received by us at least 3 working days before the commencement of the event. However, when an IES member is replaced by a non-member, the participant has to pay the difference in the relevant fees.

Cancellation/Postponement

Changes in Venue, Dates, Time and Speakers for the Events can occur due to unforeseen circumstances. IESA reserves the full rights to cancel or postpone the Event under such circumstances without prior reasons. Every effort, however, will be made to inform the participants or contact person of any cancellation or postponement.

Fees will be refunded in FULL if any Event is cancelled by IESA.

Enquiries

For further enquiries, please contact IESA general office at Tel: 6463 9211.