



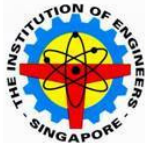
ABC Waters Professionals Core Module CU 4

Design, Construction and Maintenance of Bioretention Basins and Bioretention Swales

organized by IES



- Date** : 17 Feb 2012 (Friday)
- Time** : 8.30 am – 6.00 pm
- Venue** : 80 Toh Guan Road East, Singapore 608575 – To Be Confirmed
- Fee** : \$300.00 - IES member, SIA member, SILA member
\$380.00 - Non-member
- CPD** : PDU / PDU (QECP) / CPD - To Be Confirmed



ABC Waters Professionals Core Module CU 4

INTRODUCTION

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:





ABC Waters Professionals

Core Module CU 4

Course Outline for Core Module CU4

CU4: Design, Construction and Maintenance of Bioretention Basins and Bioretention Swales

Duration: 7 hours of lecture + Examination

Design of Bioretention Basins and Bioretention Swales (Mrs Ong Geok Suat – 2.5 hours)

- Introduction to Bioretention basins and Bioretention Swales
- Design considerations for bioretention system
- Step by step procedure for design

Construction and maintenance of Bioretention Basins and Bioretention Swales (Mr Veera – 1 hour)

- Construction tips for Bioretention system
- Plant selection
- Maintenance considerations for Bioretention System
- Case Example

Soil specification and testing for Bioretention system (Dr Chew – 2.5 hours)

- Soil Composition and Specification for Bioretention System
- Soil Testing for Hydraulic conductivity and particle size distribution for different layers in Bioretention System
- Subsoil Drainage for Bioretention System

Landscape Design for Bioretention System (Mr Stephen Caffyn – 1 hour)

- Function of bioretention system
- General Landscape design principles for bioretention system
- **MCQ Exam – 1 hour**



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Core Module CU 4

Speaker Profile

Mrs Ong Geok Suat

Mrs Ong Geok Suat graduated with a Bachelor in Civil Engineering from National University of Singapore. She also obtained a Master of Applied Science in Environmental Engineering from University of Toronto, Canada.

She has over 20 years of experience in planning and designing both drainage and used water infrastructure as well as in the operation and management of water reclamation and NEWater facilities. She is currently working in PUB and involved in the formulation of ABC Waters Design Guidelines, ABC Waters Certification and pilot testing of ABC Waters Design features.

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.

Mr Veera Sekaran

Mr Veera Sekaran is a Botanist, a Horticulturist and an ISA certified Arborist. He also delivers lectures for the Masters in Landscape Architecture (MLA) programme at NUS. He was involved in the development of the landscapes of the Zoo, Night Safari and Changi Airport. Mr. Sekaran was the Assistant Director on NParks. Mr Sekaran is currently the managing director of Greenology Pte Ltd and has also developed the Greenology Vertical Greenery (GVG), a low-cost, efficient and sustainable green wall system. He designed and built the first Rain Garden in Singapore at Balam Estate. Mr Sekaran provides various consultancies in Singapore and to countries such as Africa, Morocco, Pakistan, Malaysia, Vietnam, Indonesia and India in various technical fields in landscapes, environment and urban greening.

Mr Stephen Caffyn

Stephen Caffyn has over 20 years experience working as a Landscape Architect in private practice in the UK, Hong Kong, and Singapore. Stephen Caffyn is the Principal Landscape Architect of Stephen Caffyn Landscape Design specializing in landscape design, urban design, landscape master planning, environmental impact assessments, garden design and roof garden design.



ABC Waters Professionals

Core Module CU 4

Core Module CU1: Understanding ABC Waters Design Guidelines and Certification – 16 Sep 2011

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 Health & Maintenance
- Understand Multi-disciplinary nature of ABC Waters Management
- ABC Waters Certification Scheme

Core Module CU2: Stormwater Quality Management -Planning and Designing ABC Waters Design features - 6-7 Oct 2011

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 Jan 2012

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 –17 Feb 2012

Competency Areas:

- Understand design 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



ABC Waters Professionals

Core Module CU 4

Elective Module EU1: Design, Construction and Maintenance of Sedimentation Basins- To Commence Q1 2012

Elective Module EU2: Design, Construction and Maintenance of Cleansing Biotopes and Bioengineering Design Processes and Implementation Techniques - To Commence Q2 2012

Elective Module EU3: Design, Construction and Maintenance of Constructed Wetlands – To Commence Q2 2012

Elective Module EU4: Slope Stability and Channel Design – To Commence Q2 2012



ABC Waters Professionals Core Module CU 4

Registration Form

ABC WATERS PROFESSIONALS CORE MODULE CU4

Design, Construction and Maintenance of Bioretention Basins and Bioretention Swales

Date : 17 Feb 2012
Time : 8.30 am – 6.00 pm (Friday)
Venue : 80 Toh Guan Road East, Singapore 608575 – To Be Confirmed
Fees * : \$300.00 (IES/SIA/SILA Members) \$380.00 (Non-Members)

Please register online/fax the completed form **by 06 Feb 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: _____



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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.