DATES:
10, 12, 14, 17 and 19 June 2013

TIME:
9AM - 1PM

ENQUIRIES:
Ms. Chua Hwee Hoon at hweehoon@nus.edu.sg

FEES:
$400.00 per Workshop (Fees Exclude GST)

Discounts are available if you register for multiple workshops. Additional discounts are also available for early birds and members of partner associations.

ABOUT THE PROGRAMME:
This series of workshops provides an introduction into the new approach adopted in SS EN standards and the guidance in Singapore National Annexes for specific applications. Where appropriate, the difference between the existing practices and the new approach will be highlighted.

The workshops will be delivered by Dr. Tam Chat Tim, who was part of the Working Group in SPRING that reviewed the standards for concrete and concrete constituent materials in Singapore for the upcoming Eurocodes implementation.

The series covers the specification for concrete and constituent materials for concrete and specific applications in durability for various exposure conditions and on issues related to temperature limits for structural elements of large dimensions. The temperature issues related to high strength concrete (up to C100/115) where low water/cement ratio is associated with high cement content (> 500 kg/m³) poses challenges in ready-mixed concrete production with the selection of constituent materials and their proportions and to contractors in meeting temperature requirements, for example cooling methods for fresh and/or hardened concrete.

With the adoption of the Eurocode 2 approach in the design of concrete structures, there is a need to revise the specification and testing methods in terms of EN standards and to take into consideration, at the design stage, in selecting the level of concrete strength with due regards to construction issues, particularly due to the warm tropical climate on site.

PROGRAMME INSTRUCTOR:
Dr. Tam Chat Tim studied for his BE (Hons) and ME in Australia and his PhD in Canada. After working for three years with the Hydro-Electric Commission in Hobart and a consultancy firm in Kuala Lumpur, he joined the Department of Civil Engineering of the University of Malaya in 1963. Between 1968 and 1972, he was on leave from the UM to obtain his PhD in Materials Science on the topic of chemical admixtures in concrete. After returning, he was Head of the Department before leaving in 1979 to join the then University of Singapore, now National University of Singapore, and held the position of Vice-Dean before his retirement in 1996. Currently, he is an Associate Professorial Fellow to continue with research on concrete materials and construction.
Workshop A - Constituent Materials for Concrete (10 June 2013)

The following areas will be covered:

- Cement and Supplementary Cementitious Materials
  - SS EN 197-1: 2008 – Covers 5 main types with 27 products of common cement and SS EN 197-4: 2008 for low early strength blast furnace cements
- Aggregates
  - SS EN 12620 : 2008 covers aggregates obtained by processing natural, manufactured or recycled materials and mixtures of these aggregates for use in concrete
- Water
  - BS EN 1008 : 2002 provides the requirements for the use of water recovered from processes in the concrete industry in addition to new sources of water
- Admixtures
  - SS EN 934 adopted the approach of verifying the performance of admixtures under controlled conditions based on standard mortar or standard concretes in conformity testing
- Revision of Materials Specification

Workshop B - Concrete to EN206-1 (12 June 2013)

The new specification for concrete states more specifically the responsibilities of specifier, user and producer of concrete. The following area for the Eurocode will be covered:

- Design Concrete requirements and Conformity Testing

Workshop C - Requirements related to Exposure Classes (14 June 2013)

The National Forward to SS 544-1 states that “In order to cater to higher ambient temperatures in Singapore compared to UK, the recommendation is to consider the required concrete for at least one class higher than that based on exposure conditions in accordance with the requirements for UK exposure conditions”. The following area will be covered during this workshop with regards to the new requirements related to exposure classes:

- Concrete for different exposure classes: carbonation, chloride ingress, sulphate in soil, marine environment

Workshop D - Assessment of In-situ Concrete Strength (17 June 2013)

This workshop covers the assessment of in-situ concrete strength in existing structures, particularly in the areas of core testing and non-destructive testing approaches.

Workshop E - Temperature Issues in Tropical Concreting (19 June 2013)

Temperature limits for concrete will be covered in this workshop. Topics include early thermal cracking (temperature differential), delayed ettringite formation (maximum temperature), mitigating methods and precautions.

For each workshop, participants may purchase the listed publications from SPRING. Reference will be made to the publications during the respective workshops.

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<tr>
<th>Workshop</th>
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<tr>
<td>4</td>
<td>SS EN 13791: 2009, BS EN 12504-1: 2009, BS 6089: 2010</td>
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<td>SS EN 197-1: 2008</td>
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REGISTRATION FORM
Additional 10% discount for members of the following partner associations:-
(1) Singapore Concrete Institute
(2) American Concrete Institute Singapore Chapter
(3) Institution of Engineers Singapore

For online registration, payment via credit cards (VISA/MASTER/AMEX), please go to:
http://engpay.nus.edu.sg/events_listing.php

Bank draft / Local Cheque: Payable to “National University of Singapore”

Refunds, Cancellations and Modifications of Programme:
A 50% refund will be made for withdrawals, received in writing, 10 working days before the commencement of the course. There will be no refunds thereafter. A replacement may be accepted, with prior arrangement, at no additional cost. IEL reserves the right to modify the programme. It may also cancel the course and fully refund the participants, should unforeseen circumstances warrant it. Every effort will be made to inform participants of any changes.

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<th>Workshop(s) Attending (Please Tick)</th>
<th>No. of Workshop(s)</th>
<th>Fees (Excl. GST)</th>
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<tr>
<td>A □</td>
<td>1</td>
<td>S$400.00</td>
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<td>B □</td>
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Organisation: ____________________________
Address: __________________________________________________________
Contact Person: ____________________________ Email: ____________________________
1st Contact No.: ____________________________ 2nd Contact No.: ____________________________

Registrant(s)' Details:
1) Name: ____________________________ Designation: ____________________________ Contact Number: ____________________________
   Email: ____________________________ Dietary Restriction (if any): ____________________________

2) Name: ____________________________ Designation: ____________________________ Contact Number: ____________________________
   Email: ____________________________ Dietary Restriction (if any): ____________________________

3) Name: ____________________________ Designation: ____________________________ Contact Number: ____________________________
   Email: ____________________________ Dietary Restriction (if any): ____________________________

Please email this form to: Ms. Chua Hwee Hoon at hweehoon@nus.edu.sg, who will contact you directly regarding your registration or fax this form to +65 6874 5097.

Authorised Signature / Organisation Stamp:

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