Synopsis

Part 1: Preliminary design of high-rise buildings

Despite their challenging design, construction and great expense, high-rise buildings continue to be built in increasing numbers throughout the world. High-rise buildings quickly become impractically expensive if structural needs are not considered early. Similarly attempting to build an irrational design can waste a lot of money. It has been said that 50% of the cost of the structural frame costs are affected by preliminary design, whereas detailed design (e.g. refinement of reinforcement in a reinforced concrete structure) affects a small percentage only. Part 1 of this seminar discusses what should be considered at the preliminary design stage of a high-rise. The information can also be used in the checking of designs produced by computer.

The discussion includes the following: the origin of lateral loads; lateral load resisting systems; the nature of the wind; wind tunnel testing; effect of wind load on tall buildings; construction tolerances; notional load; shear wall layouts; wind codes; basic acceleration limits for tall buildings; vortex shedding; the importance of the P-delta phenomenon. Gravity systems are no different to those of low-rise buildings so little time is spent discussing these.

Although tall buildings are commonly constructed using steel or composite construction, this seminar focuses on concrete buildings as they are especially relevant to this region.

A case study is presented to illustrate how important preliminary design of high-rises is.

Programme Details

Course Date:
21 May 2018, Monday

Duration:
1 day

Time:
9.00am to 5.15pm

CPD Programme:
7PDU/6 STU(Structural) – All to be confirmed

Course Fee:
$299.60 (IES member)
$353.10 (Non member)

Venue:
IES Academy@Jurong East
80 Jurong East Street 21
#04-10 Devan Nair Institute
Singapore 609607

*Certificate of Attendance for participant with 100% attendance
*Course fee includes course materials, Halal refreshments and 7% GST
Synopsis

Part 2: Introduction to seismic design

In 2013 the Building Construction Authority of Singapore released “BC3: Guidebook for design of buildings in Singapore to requirements in SS EN 1998-1”. This is a guidebook for the use of the earthquake code EC8. Thus, from 2013, all high-rise buildings in Singapore should be checked to see if their design must include the effects of earthquakes originating in Sumatra. The requirements are intended to ensure ‘enhanced robustness’ rather than any increase in ductility of details used. Thus, it is necessary for practitioners to be familiar with seismic design in order to implement the code.

Course Objective

To understand the importance that Structural needs to be addressed at the preliminary design stage of the project and to know the effect of distant earthquakes on buildings in Singapore.

Course Outline

Part 1:
Introduction
Lateral Load Resisting Systems
Concrete, Steel and Composite Buildings
Case Study
Quiz 1

Part 2:
Introduction to structural dynamics
Long Range Earthquakes Affecting Singapore
Lateral Force Analysis Method
Modal Response Spectrum Analysis
Quiz 2

Target Audience

Professional Engineers, Design Engineers, Resident Engineers

Lecturer’s CV

Er. Dr. Niall MacAlevey is currently an independent consultant specializing in the analysis and design of reinforced and prestressed concrete structures, forensic engineering and the strengthening of concrete structures. He is the founder of the firm “Shamrock Consultants” and is a registered Professional Engineer in Singapore.

After graduating from University College Dublin, Ireland in 1987 with a B.E. (Civil) degree, he then obtained his M.Sc. degree in “Concrete Structures” from Imperial College, London in 1988. He completed his Ph.D degree at the Nanyang Technological University in 1997 on “The Strengthening of Concrete Structures” and later joined the academic staff there. He obtained a PGDipTHE (Post-Graduate Diploma in Teaching in Higher Education) from the National Institute of Education in 2001.

He has worked for a number of consulting engineering firms and specialist prestressing subcontractors in London, Cambridge, Hong Kong and Singapore. He is the author of four books: Structural Engineering Failures-lessons for design, Preliminary Design of High-Rise Buildings in Non-seismic Regions, Design of Reinforced Concrete Buildings to Resist Blast and Prestressed Concrete in Buildings. All books are available from Amazon.com.
# Registration Form

**Design Of High-Rise Buildings (1st Run)**

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<th><strong>Date</strong></th>
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| **Course Coordinator** | Lee Woon  
IES Academy@Jurong East  
80 Jurong East Street 21 #04-10  
Devan Nair Institute for Employment & Employability  
Singapore 609608  
Tel: 6461 1250  
Email: hon.lw@iesnet.org.sg |
| **Last Date of Registration** | 12 May 2018 or till class fully booked (whichever comes first) |

## Participant’s Details

| **Name** |  |
| **Nric/Fin No** |  |
| **Company** |  |
| **Designation** |  |
| **Address** |  |
| **Postal** |  |
| **Office No** |  |
| **Mobile** |  |
| **Fax** |  |
| **Email** |  |

- IES Member No:
- Non-Member
- RTO/RE/PE No:
- Sponsored by Company
- Special Meal Request – Vegetarian

## Contact Person (HR/Accounts Department)

| **Name** |  |
| **Designation** |  |
| **Office No** |  |
| **Fax** |  |
| **Email** |  |

**Payment Cash/Nets/Cheque:**  
- Cheque to be made payable to ‘ENGINEERS SINGAPORE PTE LTD’  
- Written Notice via email is required for Cancellation or Withdrawal of course, 7 working days prior to course date  
- Course fee inclusive of 7% GST, course materials and Halal refreshments  
- Certificate of Attendance will be issued to participants with 100% Attendance

I agree to abide to the Terms & Conditions for Registration of IES Academy Courses / Events

Name:

Signature:

Date:
TERMS & CONDITIONS COURSE REGISTRATION

Registration
Any registration, whether online, fax or by email, will be based on a first-come-first-served basis and will only be confirmed upon receipt of full payment by Engineers Singapore Pte Ltd unless otherwise invoiced to company.
All registrations must be submitted with duly completed registration form.

Closing Date & Payment
The closing date of the event will be 1 week prior to event commencement date. Cheques should be crossed ‘A/C payee only’ and made payable to ‘ENGINEERS SINGAPORE PTE LTD’, with the Date of event, Title of The Event and participants’ name indicated clearly on the back of the cheque, and post to:

Attn: Lee Woon
IES Academy@Jurong East
80 Jurong East Street 21 #04-10
Devan Nair Institute for Employment & Employability
Singapore 609607

Confirmation of Registration
Confirmation of registration will be given at least one week before the commencement date of event via email. If you do not receive the said confirmation email, you are required to contact IES Academy at 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
Written notice at least 1 week in advance before the commencement of the event Full course fee shall be refunded subjected to 4.5% transaction charge
➢ NO refund otherwise.
No-show of participant would not be accepted as a valid reason for withdrawal/refund.
One time replacement is allowed only if written notice is received by us at least 1 week 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.

UTAP (Union Training Assistance Programme) is an individual skills upgrading account especially for NTUC members. As a member, you enjoy UTAP funding at 50% of the unfunded course fee capped at $250 every year.

SkillsFuture Credit (SFC) “All Singaporeans aged 25 and above can use their $500 SkillsFuture Credit from the government to pay for a wide range of approved skills-related courses. Visit the SkillsFuture Credit website (www.skillsfuture.sg/credit) to choose from the courses available on the SkillsFuture Credit course directory.”
Please visit https://www.ies.org.sg/iesa/Skillfuture_&_UTAP.pdf for more information on SFC & UTAP claim.

Personal Data Protection Act
By registration, you consent to the processing by Institution of Engineers, Singapore of personal data, including your sensitive personal data as defined in the Data Protection Act 2014 for the proper purposes of Institution of Engineers, Singapore (IES). You undertake to observe the provisions of the Data Protection Act 2014 in relation to any personal data you may hold and process as a Members of Institution of Engineers, Singapore, and you agree to indemnify Institution of Engineers, Singapore from liability for any claims or damages that may arise from the processing of this data. For more information kindly refer to: www.ies.org.sg/PDPA.

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