

## ONE-DAY WORKSHOP

# Dynamic Analysis in Structural Design *for practicing civil and structural engineers*

**Professor Nelson Lam** PhD MSc DIC MICE MStructE

**Dr. Hing-Ho Tsang** PhD

- Date:** 26<sup>th</sup> of March, 2010 (Friday)  
**Time:** 9:15 – 17:30 (Registration starts at 9:00)  
**Venue:** College Hall, Chu Hai College of Higher Education  
Yi Lok Street, Riviera Gardens, Tsuen Wan, N.T., Hong Kong  
**Language:** Cantonese with English terminology

### COURSE OBJECTIVE

This one-day workshop is aimed at teaching and training civil and structural engineers on practical methods of analyzing building and simple bridge structures for resisting dynamic actions that are induced by extreme events such as earthquakes, impact and explosion. Tall buildings also require dynamic analysis for wind induced forces. Analysis is an important part of the detailed design process to check that the designed structures are safe and comply with code requirements. Rapid analysis methods enable a designer to try out and check many different schemes in the conceptual design stage. Methods to be taught in this one-day workshop are transparent, easy to understand and apply in practice. No prior knowledge on structural dynamics is expected of participants. Every part of the course features worked examples to facilitate learning. Powerful programs written on spreadsheets for analysis of structures and numerous selected technical articles for self-reading are provided to every participant in a CD. Learning structural dynamics by this workshop is more effective than going through textbooks or using commercial computer software.

### PARTICIPANTS WILL LEARN .....

- Theories and practice of structural dynamics.
- Simple hand calculation methods for estimating the dynamic properties of buildings and bridge structures for estimating their response to extreme dynamic loadings.
- Practical techniques for solving the dynamic problems of high-rise buildings and implementing the technique on plain EXCEL spreadsheets which the participants can further develop and modify customizing individual needs.
- The use of plain EXCEL spreadsheets for simulating the motion of a structure in an earthquake.

**TIMETABLE** (subject to minor modifications without notice)

9:00 - 9:15	<i>Registration</i>
9:15 - 9:30	Course Opening and Introduction
9:30 - 10:15	Dynamics and Response to Transient Actions Fundamentals
10:15 - 10:30	<i>Coffee and Refreshments</i>
10:30 - 11:30	Simple Hand Calculation Methods of Dynamic Analysis
11:30 - 12:30	Theories and Practice of Dynamic Analysis (I)
12:30 - 14:00	<i>Lunch Break</i>
14:00 - 15:00	Practical Examples of Dynamic Analysis with EXCEL Spreadsheets (I)
15:00 - 16:00	Theories and Practice of Dynamic Analysis (II)
16:00 - 16:15	<i>Coffee and Refreshments</i>
16:15 - 17:15	Practical Examples of Dynamic Analysis with EXCEL Spreadsheets (II)
17:15 - 17:30	Summary and Closing

**ABOUT THE INSTRUCTORS**

**Nelson Lam**, Reader in Civil Engineering at The University of Melbourne, is an internationally recognized expert in earthquake engineering and structural dynamics. In the past 20 years, he has been researching and consulting widely in this field. His achievement in research and knowledge transfer in earthquake engineering and structural dynamics was recognized by the award of the Chapman Medal (1999) and the Warren Medal (2006) by Engineers Australia and the Best Paper Award (2004-2007) by the ISET Journal of Earthquake Technology. He served as member of the sub-committee for developing the new standard for Earthquake Actions in Australia. At University of Melbourne, he is coordinator of higher degree programs in civil and structural engineering and chair of examiners of master and PhD research candidatures. His early career was with Scott Wilson International as structural engineer in their Hong Kong Office throughout the 1980's and attained chartered engineer status in 1986. He was awarded the degree of Ph.D. in earthquake engineering at The University of Melbourne in 1993, master degree in concrete structures at Imperial College of Science & Technology, London in 1982 and bachelor degree in civil engineering with a first class honours at The University of Leeds, England in 1981.

**Hing-Ho Tsang** obtained his Ph.D. in earthquake engineering from The University of Hong Kong and was awarded the Li Ka Shing Prize and Norman W.M. Ko Ph.D. Prize for the best thesis of the year by the university. He is currently Assistant Professor at Chu Hai College of Higher Education, Lecturer at The University of Hong Kong and has been Visiting Scholar at The University of Melbourne, Australia since 2004. He has published some 60 technical articles and has won the Endeavour Australia Cheung Kong Award from the Australian Government, Hsai-Yang Fang Research Award from The International Society of Environmental Geotechnology and Highly Commendable Paper Award in the Sixth International Conference on Shock and Impact Loads on Structures.

**Course fee:** HK\$800 each for ASCE members;  
HK\$900 each for non-ASCE members;  
HK\$200 each for ASCE student members (limited seats).  
(Fee includes lecture notes, lunch, tea/coffee and an attendance certificate.)  
(Computers will be provided by the organizer.)

**Certificate:** This course is recommended for one CPD day.

**Enquiry:** Please contact the Course Coordinators :  
Dr. Hing-Ho Tsang (Tel: 2408 9750 ; Email: [tsang@chuhai.edu.hk](mailto:tsang@chuhai.edu.hk))  
Dr. K.T. Wan (Tel: 2408 9750 ; Email: [ktwan@chuhai.edu.hk](mailto:ktwan@chuhai.edu.hk))

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### *Registration Slip*

Please complete this registration slip and return it together with cheque payable to  
**American Society of Civil Engineers - Hong Kong Section**

by post to

Course Secretariat - ASCEISG, HKUSTCE (Email: [asce@ust.hk](mailto:asce@ust.hk) )  
Room 3592 (c/o Prof. Limin Zhang), Department of Civil & Environmental Engineering  
The Hong Kong University of Science and Technology  
Clearwater Bay, Kowloon, Hong Kong

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### **Dynamic Analysis in Structural Design on 26<sup>th</sup> of March, 2010 (Friday)**

To: Course Secretariat, ASCE Hong Kong Section (Email: [asce@ust.hk](mailto:asce@ust.hk) )

Name: (Last name in CAPS) Mr/Mrs/Ms/Ir/Dr/Prof \_\_\_\_\_

Office Tel No.: \_\_\_\_\_ Mobile No.: \_\_\_\_\_

Email Address: \_\_\_\_\_ Company Name: \_\_\_\_\_

ASCE Membership (if applicable): Student / Associate Member / Member (Please circle)

ASCE Membership No. (if applicable): \_\_\_\_\_

Fee paid: HK\$ \_\_\_\_\_ Enclosed Cheque No.: \_\_\_\_\_

Bank: \_\_\_\_\_

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# Chu Hai College of Higher Education 珠海學院

## Location Map



Address : Yi Lok Street, Riviera Gardens, Tsuen Wan, N. T.  
新界荃灣海濱花園怡樂街 (Tel./電話: 2408 9928)

### Transportation to Chu Hai College of Higher Education

- KMB Bus **238M** from Tsuen Wan MTR
- KMB Bus **238X** from Jordan along Nathan Road., Cheung Sha Wan Road., Mei Fu MTR
- Minibus **404M** from Kwai Fong MTR
- Minibus **310M** from Tsing Yi MTR
- Minibus **99** from Tsuen Wan West MTR
- Walk from Tsuen Wan West MTR (*route indicated on the Map*) - 15 min.