

## REGISTRATION FORM

### Forensic Engineering for Civil, Structural & Geotechnical Engineers - Technical & Legal Issues

9 – 11 November 2009 (2.5 Days) Fee: S\$900+Prevailing Tax

Discount: 10% max for

- NUS Alumni; GeoSS Members; IES Members; SSSS Members; and Organizations sending 3 or more participants.

#### Refunds and Cancellations:

A 50% refund will be made for withdrawals (received in writing) 10 working days before the commencement of the course. No refunds will be made thereafter. However, a replacement will be accepted upon prior arrangement at no extra cost. Please inform us of the changes, if any, by fax. The Professional Activities Centre reserves the right to cancel the course and fully refund the participants, should unforeseen circumstances warrant it.

#### Contact Person: Miss LIM Hui Leng

Professional Activities Centre, Fac of Engrg, Nat'l Uni of S'pore, 9 Engrg Dr 1, Blk EA #05-34, S117576; T: (65) 6516 5113 F: (65) 6874 5097

E-mail : [enghlh@nus.edu.sg](mailto:enghlh@nus.edu.sg); <http://www.eng.nus.edu.sg/PACentre/>

#### Participant's details:

1) Dr/Mr/Ms: \_\_\_\_\_

Designation: \_\_\_\_\_ \*NUS Alumni/ MGeoSS/ MIES/ MSSSS

2) Dr/Mr/Ms: \_\_\_\_\_

Designation: \_\_\_\_\_ \*NUS Alumni/ MGeoSS/ MIES/ MSSSS

3) Dr/Mr/Ms: \_\_\_\_\_

Designation: \_\_\_\_\_ \*NUS Alumni/ MGeoSS/ MIES/ MSSSS

Organization: \_\_\_\_\_

Contact Person: \_\_\_\_\_ Email: \_\_\_\_\_

Address: \_\_\_\_\_

Tel No (O): \_\_\_\_\_ Fax No: \_\_\_\_\_

\*\*Dietary Preference: No Pork No Lard/Vegetarian

#### Payment Mode:

Cheque/Bank draft No: \_\_\_\_\_ Amount (S\$): \_\_\_\_\_

Made Payable to "National University of Singapore"

Credit Card: \_\_\_\_\_ Expiry Date: \_\_\_\_\_

Card Type: VISA / MASTERCARD / AMEX Signature: \_\_\_\_\_

#### Closing Date:

Please send in your registration form together with your payment by **2 November 2009**

Company Stamp \_\_\_\_\_

## Forensic Engineering for Civil, Structural and Geotechnical Engineers – Technical & Legal Issues

**Date: 9 – 11 November 2009 (2.5 Days)**

**Time: 9.00am – 5.30pm, 9.00am-1.00pm (11 November)**

**PDU's (Pending Approval from PE Board)**

#### SPEAKERS

##### Er. Prof. Fred S H NG

BSc, CEng, FICE, FStructE, FHKIE, MCI Arb, Sr. MIES, PEng(S'pore)

Consultant, Davis Langdon & Seah, Hong Kong.

Consultant, Jacobs Babbie Consulting Engineers, Singapore

##### Mr Tan Liam Beng

LLM, Barrister, BE (Civil), PEng (M), FCI Arb, FSI Arb, FMI Arb, MIES, MIEM

Drew & Napier LLC, Singapore

##### Er. Prof J Y Richard Liew

PhD, CEng, MStructE, MASCE, Sr.MIES, MSSSS, M.S.I.D, PEng(S'pore)

Civil Engineering Department, National University of Singapore

##### Er. Prof Leung Chun Fai

Ph D, CEng, MICE, MIES, PEng Geo(S'pore)

Civil Engineering Department, National University of Singapore

Construction failures often lead to litigation process which could have serious consequences for developers, consultants, contractor and individuals in terms of structural rehabilitation and loss of business or life. Successful diagnosing of cause of failures, assessing its consequences, and presenting the findings convincingly are important to this process. Investigation of such failure will provide necessary lessons to be learned by construction professionals so that recurrence of such failures could be eliminated or minimised.

Forensic engineering is a field which looks into the causes of deficiencies and failures in construction projects and other facilities and helps in the process of testifying in judicial proceedings.

This course will highlight the importance of forensic engineering in the investigation of construction failures and subsequent litigation process, common deficiencies in building and geotechnical structures. The main highlights are on the investigation processes of past structural and geotechnical failures and lessons learnt from such investigations.

#### TARGET AUDIENCE

This course is designed for Practicing Engineers, Consultants, Contractors, Facility Management Professionals, Legal Professionals, Insurance Professionals and those who are interested in forensic engineering topics.

#### SUPPORTED BY

Geotechnical Society of Singapore, The Institution of Engineers, Singapore & the Singapore Structural Steel Society

#### JOINTLY ORGANIZED BY

Department of Civil Engineering & Professional Activities Centre,  
Faculty of Engineering, National University of Singapore

**Company Registration: 200604346E**



## COURSE OUTLINE

### Forensic Engineering I – An Introduction to Forensic Engineering

- The application of the art and science of engineering to the matters at issue in the jurisprudence system;
- Investigations, analysis and report;
- How a forensic engineering case is handled;
- The forensic engineer's reports are subjected to close and aggressive scrutiny by some of the best qualified person available;
- Ethical and Professional Responsibilities;
- The Legal System in the Common law Regime;
- The Law Courts and Tribunals;
- Case Studies – with excerpts of some recent cases dealt with;
- Other duties expected from a Forensic Engineer

### Forensic Engineering II – Expert Evidence and Expert Witness

- Expert evidence – what is it and what is its origins;
- Who is considered qualified to provide such evidence;
- Importance of qualifications and practical experience;
- Duties of an Expert;
- Court appointed Expert;
- Preparation of Expert Evidence – factual, simple, planning and structure, immunity and liabilities;
- Dos and Don'ts of an Engineering Expert
- What are layers looking for?
- Briefing of the Solicitor, Counsel and SC;
- The Expert witness in Court;
- The Anatomy of a Court Case;
- Giving Expert Evidence in Court or Tribunal;
- Conduct of an Expert Witness in Court;
- The Expert's Professional fees;
- The Expert having a Financial Interest in the outcome of the case and the Declaration

### Construction Law Practice and Case Studies

- Forensic Engineering and Expert Evidence – A Lawyer's Perspective
- Types of Expert – differences in appointment by parties and court/tribunal
- Burden and standard of proof – who bears it in civil and criminal cases?
- How is Expert Evidence evaluated?
- Case studies in relation to Expert Evidence

### Structural Engineering

- Investigations of structural problems and failures;
- Common causes of structural problems;
- Design, construction and monitoring of structural infrastructure projects ;
- Structural integrity and robustness and their design implications; and
- Remedial measures and future precautions

### Collapse Investigations

- Case studies on Structural Roof collapse;
- Proper connections and welding defects;
- Cantilever structures; and
- Stability issues during construction

### Case studies

- Nicoll highway collapses, prosecution expert witness; and
- Fusionpolis collapse, defense expert witness

### Geotechnical Engineering

- Investigations of geotechnical problems and failures;
- Common causes of geotechnical problems;
- Design, construction and monitoring of geotechnical infrastructure projects;
- Remedial measures and future precautions;
- Case studies on various geotechnical problems;
- Lessons learnt from cases studies; and
- Roles and independence of expert witness

### Conclusion / Panel Discussion

## SPEAKERS' PROFILE

### Er. Prof. Fred S H NG

*BSc, CEng, FICE, FStructE, FHKIE, MCI Arb, Sr. MIES, PEng(S'pore)*

Consultant, Davis Langdon & Seah, Hong Kong.

Consultant, Jacobs Babbie Consulting Engineers, Singapore

After obtaining his first degree in Civil Engineering from the University of Aston in Birmingham, England, Er. Prof. Ng gained practical experience and qualified in Civil and Structural Engineering in the UK. He has extensive practical experience in Civil, Structural and Geotechnical engineering in the UK, Hong Kong and Singapore. He has been the Government Structural Engineer with the Hong Kong Government, working experiences in an engineering consultancy, real estate developer's and contractor's offices. He has been a practicing forensic engineer and an expert witness for over twenty years. He is also very active in Academic works being an Adjunct Professor in Civil Engineering in the University of Hong Kong and Adjunct Professor in Civil and Structural Engineering in the Hong Kong Polytechnic University.

### Mr Tan Liam Beng

*LLM, Barrister, BE (Civil), PEng (M), FCI Arb, FSI Arb, FMI Arb, MIES, MIEM*

Drew & Napier LLC, Singapore

MrTan is a Director and heads the Building and Construction Business Group in the law company of Drew & Napier LLC, one of the oldest and largest law practices in Singapore. Prior to practicing law in Malaysia and Singapore, he worked as a civil and structural engineer and had experience in design and construction of engineering and building projects. He is a registered Professional Engineer in Malaysia, Member of the Institution of Engineers in Malaysia and in Singapore, Fellow of the Chartered Institute of Arbitrators in UK, Fellow of Singapore and Malaysian Institute of Arbitrators, Adjudicator of the Singapore Mediation Centre and a Regional Arbitrator of the Singapore International Arbitration Centre.

Currently, Mr Tan does both contentious as well as non-contentious legal work in relation to building and engineering matters. The contentious work includes Litigation, Arbitration, Mediation and Adjudication of large civil claims, as well as acting as a Defence Counsel in the prosecution of the Compassvale and Fusionpolis incidents. He is a co-author of *Standard Form of Sub-Contracts – An Annotation*. He is also an adjunct Associate Professor for the joint King's College-NUS MSC Programme in Construction Law and Arbitration.

### Er. Prof. J Y Richard Liew

*PhD, CEng, MStructE, MASCE, Sr.MIES, MSSSS, M.S.I.D, PEng(S'pore)*

Civil Engineering Department, National University of Singapore

Er. Prof. Liew is currently a professor and the director for hazard and risk mitigation programme in the Department of Civil Engineering at the National University of Singapore. He has published more than 270 papers in international journals and conferences in his specialized field of structural engineering. Prof. Liew is a Chartered Engineer of UK and a Professional Engineer in Singapore. He has served as specialist consultant to many government and private sector construction and offshore projects in Singapore and Southeast Asia. He has investigated a number of structural failures including the Nicoll highway and Fusionpolis collapses. He is an independent director of two public listed companies in Singapore.

### Er. Prof. Leung Chun Fai

*Ph D, CEng, MICE, MIES, PEng Geo(S'pore)*

Civil Engineering Department, National University of Singapore

Er. Prof. C F Leung is currently a professor with the Department of Civil Engineering at the National University of Singapore. He has published widely in international journals and conferences in his specialized field of geotechnical engineering. Dr Leung is a Chartered Engineer of UK and a Professional Engineer (geotechnical specialist) in Singapore. He has served as geotechnical consultant to many government and private sector construction projects in Singapore and Southeast Asia including a good number of cases involving geotechnical failures.