Forensics Engineering for Civil, Structural and Geotechnical Engineers - Technical and Legal Issues

Understanding the technical and legal issues

3 - 5 October 2017

Construction failures often led to litigation process which could have serious consequences for developers, consultants, contractors 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 minimized.

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. The 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.

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.

**PDU:** To be advised

**Course Fees per Participant:**
SGD 1,605 (incl. of 7% GST)

**Discounts** (non-cumulative):
5% early bird discount for registration by 15 September 2017
Discounted course fee @ SGD 1,524.75 per participant

10% discount for group registration of 3 or more from the same organization
Discounted course fee @ SGD 1,444.50 per participant

- Payment is required with registration and must be received prior to the course commencement to confirm a place.
- A confirmation email and official receipt will be issued when registration is accepted.
- Acceptance into the course is on a first-come-first serve basis.

**Register by:** 25 September 2017

**Contact:**
Ms. Sangeetha D/O Govindasamy (ceesgo@nus.edu.sg)
Ms. Cecilia Dewi (ceesdc@nus.edu.sg)

[Registration Form](#)
[Registration Form (Group)](#)
## COURSE SCHEDULE & TIMETABLE

### Day 1: Tue 3 Oct 2017

<table>
<thead>
<tr>
<th>Topic 1</th>
<th>Forensic Engineering I - Introduction to Forensic Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venue</td>
<td>E2-03-03 Engineering Drive 2</td>
</tr>
<tr>
<td>Facilitator</td>
<td>Er. Professor Fred S H Ng</td>
</tr>
<tr>
<td>Topic 2</td>
<td>Forensics Engineering II - Expert Evidence and Expert Witness</td>
</tr>
<tr>
<td>Venue</td>
<td>E2-03-03 Engineering Drive 2</td>
</tr>
<tr>
<td>Facilitator</td>
<td>Er. Professor Fred S H Ng</td>
</tr>
</tbody>
</table>

- **Forensic Engineering I - 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 and 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 and the Legal System in the Common law Regime
  - The Law Courts and Tribunals
  - Other duties expected from a Forensic Engineer

- **Forensics Engineering II - Expert Evidence and Expert Witness**
  - Expert evidence – what is it and what are 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
  - Do's and Don'ts of an Engineering Expert
  - What are lawyers looking for?
  - Briefing of the Instructing Solicitor, Counsel and Senior Counsel
  - The Expert witness in Court and the Anatomy of a Court Case
  - Giving Expert Evidence in Court or Tribunal and conduct of an Expert Witness in Court
  - The Declaration chapter in the Expert’s report

### Day 2: Wed 4 Oct 2017

<table>
<thead>
<tr>
<th>Topic 1</th>
<th>Structural Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venue</td>
<td>E2-03-03 Engineering Drive 2</td>
</tr>
<tr>
<td>Facilitator</td>
<td>Er. Prof. Richard Liew Jat Yuen</td>
</tr>
<tr>
<td>Topic 2</td>
<td>Collapse Investigations</td>
</tr>
<tr>
<td>Venue</td>
<td>E2-03-03 Engineering Drive 2</td>
</tr>
<tr>
<td>Facilitator</td>
<td>Er. Prof. Richard Liew Jat Yuen</td>
</tr>
</tbody>
</table>

- **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 remedial measures and future precautions

- **Collapse Investigations**
  - Case studies on Roof collapse
  - Proper connections and welding defects
  - Cantilever structures and stability issues during construction
  - Lesson learnt from case studies, and roles of expert witness

### Day 3: Thu 5 Oct 2017

<table>
<thead>
<tr>
<th>Topic 3</th>
<th>Geotechnical Engineering – Legal Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venue</td>
<td>Lecture Theatre 1 10 Kent Ridge Crescent</td>
</tr>
<tr>
<td>Facilitator</td>
<td>Er. Prof. Leung Chun Fai</td>
</tr>
</tbody>
</table>

- **Geotechnical Engineering – Legal Issues**
  - Investigations of geotechnical problems and failures
  - Common causes of geotechnical problems
  - Design, construction and monitoring of geotechnical infrastructure projects
  - Remedial measures and future precautions

- **Geotechnical Engineering – Case Studies**
  - Case Studies on various geotechnical problems
  - Lessons learnt from geotechnical case studies, and roles and independence of expert witness

- **Panel Discussion Led by Facilitators**
  - Prosecution expert witness
  - Defense expert witness
**FACILITATORS**

Er. Prof. Leung C F
PhD, CEng, MICE, MIES, PE(Geo)(S’pore)
Civil and Environmental Engineering Department, National University of Singapore

**Er. Prof. Leung** has taught courses in geotechnical engineering, pile foundations, rock mechanics and geotechnical investigation and monitoring. He has published many technical papers in international journals and conferences covering topics such as centrifuge modelling of geotechnical problems, pile foundations, land reclamation and excavation in jointed rocks.

He is a member of International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) Technical Committee TC104 on Geotechnics of Physical Modelling and Centrifuge Testing and TC209 Offshore Geotechnics. He serves on the Editorial Board of several journals, including the prestigious Geotechnique journal. He also delivered keynotes at many international conferences.

**Er. Prof Leung** is a registered professional engineer (Geotechnical Specialisation) in Singapore and a chartered civil engineer in UK. He has served as a geotechnical consultant for many government and private organisations involving projects in Singapore and the region on pile foundations, land reclamation, marine and offshore geotechnics.

Er. Prof. Richard Liew J Y
PhD, CEng, MInstCE, FSEng, SR. MIES, Hon.FSSSS, Hon.FHKSCI, PEng (S’pore), ACPE
Civil and Environmental Engineering Department, National University of Singapore

**Er. Prof Richard Liew** is a Professional Engineer in Singapore, a Chartered Engineer in U.K, a Chartered Professional Engineer of the Association of Southeast Asian Nations, and Past President of the Singapore Structural Steel Society and a fellow of academy of Engineering Singapore.

His main research focus is on steel and composite materials and structures with applications to high rise and large span structural systems covering defence, offshore, and building sectors. His research has garnered more than 2669 cites (h-index 30) in Google scholar.

**Er. Prof Liew** is world-renowned as an expert of advanced analysis and the application of theory of stability and plasticity in structural and offshore engineering with emphasis on robustness and hazard assessments including the effects due to fire, blast and impact loads. He has authored and co-authored five books and published over 400 technical papers. He is a fellow of the academy of engineering singapore, member of the Institution of Structural Engineers (UK) and the Institution of Engineers, Singapore, and the Honorary Fellow of Hong Kong Institute of Steel Construction and Singapore Structural Steel Society. He has served in numerous international and local technical committees relating to material and building standards. He is currently a member of SPRING, Singapore’s Technical Committee on Building Structure and wherein he also serves as a Convenor on the adoption of EC3 and EC4 in Singapore and chairing several workgroups for EC3 and EC 4.
<table>
<thead>
<tr>
<th>Er. Professor Fred S. H. NG</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSc, FICE, FIstructE, FHKIE, MCIarb, PEng (S’pore and HK)</td>
</tr>
<tr>
<td>Senior Advisor to the President, The Hong Kong Polytechnic University</td>
</tr>
</tbody>
</table>

Er. Professor Fred S. H. NG obtained his first degree in Civil Engineering from the University of Aston in Birmingham, UK.

He is a Chartered Civil and Structural Engineer in the UK. He is also a PEng in Hong Kong and Singapore. He has extensive practical experience in Civil, Structural, Geotechnical and Forensic engineering in the UK, Hong Kong and Singapore.

His involvements in University activities include being an Adjunct Professor in Civil Engineering in the University of Hong Kong, Senior Advisor to the President and Court Member of the Hong Kong Polytechnic University.

<table>
<thead>
<tr>
<th>Mr. Tan Liam Beng</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE (Hons) (Civil), Bachelor of Laws (Hons), Master of Laws, Advocate &amp; Solicitor of Supreme Court of Singapore, Professional Engineer, Board of Engineers, Malaysia</td>
</tr>
</tbody>
</table>

Mr. Tan Liam Beng is currently the Managing Director of the law company Elbee Law LLC. He is a qualified engineer as well as an advocate and solicitor. He has been working as a civil engineer since graduating with a civil engineering degree in 1982, with experience in design as well as construction prior to practicing law. He worked in the consultancy companies of Syed Muhamad Hooi & Binnie Sdn Bhd and Kumarasivam Tan & Ariffin Sdn Bhd in Malaysia and in the construction company of Ho Hup Construction Co Sdn Bhd. He practiced as a lawyer in Malaysia from 1991 to 1994.

Mr Tan joined Drew & Napier, one of the largest and leading law firms in Singapore, as an advocate and solicitor in 1994, became a Partner in 1996, and then a Director in 2001 when Drew & Napier LLC corporatised. He headed the Building and Construction Business Group in Drew & Napier until he left in October 2013 to set up the law company Elbee Law LLC.