



# IEM

The Institution of Engineers, Malaysia

The Institution of

# StructuralEngineers

# Two - Day Course on Advanced Structural Engineering with particular reference to the Chartered Membership Examination of the Institution of Structural Engineers, United Kingdom

by Mr. Rajavel Inbarajan

Date : 21st & 22nd June 2023

Venue: Auditorium Chin Fung Kee, Wisma IEM

Platform : Physical

Time : 9.00 am - 5.00 pm

BEM APPROVED CPD HOURS : 13

CPD ref : IEM23/HQ/148/C

*Organized & Hosted by:  
Civil and Structural Engineering Technical Division  
(CSETD), IEM & The Institution of Structural Engineers ( IStructE)*

#### **Cancellation Policy**

No cancellation will be accepted prior to the date of the event. However, replacement or substitute may be made at any time with 7 days prior notification and substitute will be charged according to membership status.

#### **Personal Data Protection Act**

I have read and understood the IEM's Personal Data Protection Notice published on IEM's website at <http://www.myiem.org.my> and I agree to IEM's use and processing of my personal data as set out in the said notice.

Closing date : 13th June 2023

\*No online registration is allowed after the closing date\*



Rajavel Inbarajan  
BE, MSc(London), DIC, MIStructE  
Chartered Structural Engineer  
Engineering Consultant – INKAN TECONS PTE LTD

### ABOUT THE SPEAKER

Rajavel Inbarajan studied Civil Engineering in Vellore Institute of Technology (erstwhile called Vellore Engineering College) and obtained his BE (First Class with Distinction) from the University of Madras, India in 1988. Then, he obtained his MSc and DIC in Concrete Structures from the University of London and Imperial College London, UK in 1997. He became a Corporate Member of the Institution of Structural Engineers (IStructE), UK after got through the Chartered Membership Examination (CME) held in April 2004 in his first attempt. The IStructE appointed him as an Examiner for the CME in 2008. He was one of the Chief Examiners of CME held in Jan 2019, Jan 2020, Mar 2022 and Feb 2023.

He has more than 30 years of quality and varied experience in conceptual design, detailed design and project management of very large structural and civil engineering projects in international and cross-cultural set-up. He has been working with reputable International Consultants and Contractors in very large engineering projects with increasing responsibilities in Qatar, United Arab Emirates, Saudi Arabia, Oman, Singapore, Sri Lanka and India since 1988. His experience broadly covers the design and construction of low-rise & high-rise buildings, airports, bridges, underground/above ground metro stations, mega water retaining structures/reservoirs, and the investigation/rectification of very large marine structures.

He had conducted seminars on Advanced Structural Engineering, Water Retaining Structures and Investigation and Strengthening of Concrete Structures in Malaysia, Qatar and Sri Lanka previously. He has been conducting CME preparation courses and delivering talks on CME since 2009. He trained enthusiastic candidates globally in their preparation for CME. Recently, he provided possible solutions to the CME questions for publication in the examination preparation CD and the website of the IStructE.

### SYNOPSIS

This 2-Day Advanced Structural Engineering Course is aimed at those aspiring senior and young engineers, who wish to refresh and enhance their skills in structural analytical and design of structures. In order to achieve the intended objectives, the format of the course is, therefore, devised like an examination preparation workshop for the Chartered Membership Examination (CME) of the Institution of Structural Engineers. One of the prime objectives of the examination is to test the technical competency and skillfulness of the candidates in executing their daily work with respect to the art and science of Structural Engineering.

Hence, in this respect, the course will attempt to illustrate required structural design skills, ability in conceptualizing distinct and viable structural schemes and producing annotated sketches/drawings for a given task that will be based on some of the past CME questions, which are normally derived from real projects around the world.

### WHO SHOULD ATTEND?

This course is organized not only for those intending to take the CME but also for those who wish to improve, inter alia, their skills in conceptual design of structures in general. Therefore, this course is suitable for practicing civil and structural engineers, academic staff teaching conceptual design and young engineers in their formative years. It is advised that the participants shall bring calculators as design exercise to be carried out during the workshop.

## TENTATIVE PROGRAMME

### DAY 1

|              |   |
|--------------|---|
| 8.30 -9.00   | Registration of participants  |
| 9.00-9.05    | Welcome address and Introducing Resource Person   |
| 9.05 -10.30  | <b>A Chief Examiner's Perspective of Chartered Membership Examination of IStructE on</b> <ul style="list-style-type: none"><li>• Functional Framing, Load Transfer, Serviceability and Stability Aspects of Schemes</li><li>• Review and Critical Appraisal of Schemes</li><li>• Letter Writing</li><li>• Design of Structural Elements</li><li>• Drawings for Estimation</li><li>• Method Statement &amp; Construction Programme</li></ul> |
| 10.30-11.00  | <b>Design Process</b> <ul style="list-style-type: none"><li>• Aim of Structural Design</li><li>• Understanding &amp; Appreciation of Conceptual Design</li></ul>  |
| 11.00-11.15  | Morning Tea / Coffee Break  |
| 11.15 -12.15 | <b>Structural Systems for Concrete and Steel Structures</b> <ul style="list-style-type: none"><li>• Floor Systems</li><li>• Shear Wall and Bracing Arrangements</li></ul>   |
| 12.15-13.00  | <b>Foundation &amp; Retaining Wall Systems</b> <ul style="list-style-type: none"><li>• Shallow Foundations</li><li>• Deep Foundations</li><li>• Earth Retaining and Stabilising Structures (ERSS)</li></ul>   |
| 13.00-14.00  | Lunch break   |
| 14.00-15.30  | <b>Analytical and Design Tools</b> <ul style="list-style-type: none"><li>• Approximate Analysis Methods</li><li>• Thumb Rules for Sizing Elements</li></ul>   |
| 15.30-15.45  | Tea break   |
| 15.45-17.00  | <b>Possible Solution for CME Past Questions</b> <ul style="list-style-type: none"><li>• Airport Departure Terminal - Q2 of CME January 2020</li><li>• Peace Dialogue Station - Q4 of CME March 2022</li><li>• Emergency Generator Building – Q5 of CME January 2016</li></ul>   |

## TENTATIVE PROGRAMME

### DAY 2

|             |   |
|-------------|---|
| 9.00-11.00  | <b>Water Retaining / Basement / Underground Structures</b> <ul style="list-style-type: none"><li>• Watertight Design – Crack Width (As per EC2: Part 3)</li><li>• Basement Grades</li><li>• Waterproofing Protection</li></ul>                            |
| 1100-1115   | <b>Morning Tea / Coffee Break</b>   |
| 11.15 –1300 | <b>Possible Solution for CME Past Questions</b> <ul style="list-style-type: none"><li>• Flood Alleviation Tank – Q4 of CME April 2004</li><li>• Water Tank – Q4 of CME January 2018</li></ul>   |
| 1300-1400   | <b>Lunch break</b>  |
| 1400-1530   | <b>Guide to Robustness and Disproportionate Collapse</b> <ul style="list-style-type: none"><li>• Class 1 Buildings</li><li>• Class 2A &amp; 2B Buildings</li></ul> <b>(Approach to Class 3 Buildings will be highlighted)</b>                             |
| 1530-1545   | <b>Tea break</b>  |
| 1545-1700   | <b>Possible Solution for CME Past Questions</b> <ul style="list-style-type: none"><li>• City Centre Office Building – Q5 of April 1996</li><li>• Airship Hangar – Q2 of CME September 2022</li><li>• Faculty Building – Q4 of CME February 2023</li></ul> |

“IEM reserves the right to alter or cancel the programme due to unforeseen circumstances at its discretion’.  
IEM SHALL NOT be responsible for any direct or consequential losses”.

**For further details, kindly contact:  
The Institution of Engineers, Malaysia  
Bangunan Ingenieur, Lots 60/62, Jalan 52/4, P.O. Box 223 (Jalan Sultan),  
46720 Petaling Jaya, Selangor  
Tel: 603-7968 4001/2 Fax : 603-7957 7678**

**Email : [shamalah@iem.org.my](mailto:shamalah@iem.org.my) / [shahrul@iem.org.my](mailto:shahrul@iem.org.my)**

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(CSETD), IEM & The Institution of Structural Engineers ( IStructE)*

## PROGRAMME

Two - Day Course on Advanced Structural Engineering with particular reference to the Chartered Membership Examination of the Institution of Structural Engineers, United Kingdom  
21st – 22nd June 2023 (Wednesday & Thursday)

Jointly Organized by :

Civil & Structural Engineering Technical Division (CSETD)& IStructE

Tel: 603-7968 4001/2

Fax : 603-7957 7678

Email: shamalah@iem.org.my / shahrul@iem.org.my

| Registration Fees (subject to 6% sst) |  |                                      |
|---------------------------------------|--|--------------------------------------|
|                                       | Online Fee (RM)  | Normal Fee (RM)<br>via email/walk in |
| IEM Student Members                   | 250  | 280                                  |
| IEM Graduate Members                  | 500  | 600                                  |
| IEM Corporate Members                 | 800  | 900                                  |
| Non IEM Members                       | 1100   | 1200                                 |
| IStructE Members                      | STRICTLY REGISTRATION VIA NORMAL AS PER IEM MEMBER RATE<br>IStructE members shall register online via the IEM Website. |                                      |

| No            | Name(s) | Membership No. | Grade | Fee (RM)* |
|---------------|---------|----------------|-------|-----------|
|               |         |                |       |           |
|               |         |                |       |           |
|               |         |                |       |           |
|               |         |                |       |           |
| SUB TOTAL     |         |                |       |           |
| ADD 6% SST    |         |                |       |           |
| Total Payable |         |                |       |           |

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## PAYMENT DETAILS

**C a s h**      R M    \_ \_ \_ \_ \_

**CHEQUE NO. \_\_\_\_\_ FOR THE AMOUNT OF RM \_\_\_\_\_ (NON REFUNDABLE) PAYABLE TO "THE INSTITUTION OF ENGINEERS, MALAYSIA" AND CROSSED AS A/C PAYEE ONLY**

**FULL PAYMENT must be settled before commencement of the seminar, otherwise participants will not be allowed to enter the hall. If a place is reserved and the intended participant fails to attend the course, the fee is to be settled in full. If the participant failed to attend the course, the fee paid is non refundable. The Registration Fee includes lecture notes, refreshment and lunch (whichever available).**

**For ONLINE REGISTRATIONS, please note that payment MUST be made BEFORE the closing date. If payment is not received within the stipulated time, the registration fee will be reverted to the normal registration fee.**

|                         |             |  |             |  |
|-------------------------|-------------|--|-------------|--|
| <b>Contact Name:</b>    |             |  |             |  |
| <b>Organisation:</b>    |             |  |             |  |
| <b>Designation</b>      |             |  |             |  |
| <b>Mailing Address:</b> |             |  |             |  |
| <b>Contact Nos.:</b>    | <b>Tel:</b> |  | <b>Fax:</b> |  |
| <b>Hand phone No.</b>   |             |  |             |  |
| <b>E-mail:</b>          |             |  |             |  |

**SIGNATURE**    \_ \_ \_ \_ \_

**STAMP**    \_ \_ \_ \_ \_

**Terms & Conditions:**

- For ONLINE REGISTRATIONS, only ONLINE PAYMENT is applicable [via RHB and Maybank2u -Personal Saving & Personal Current ; Credit Card - Visa/Master.
- Payment via CASH / CHEQUE / BANK-IN TRANSMISSION / BANK DRAFT / MONEY ORDER / POSTAL ORDER / LO / WALK -IN will be considered as NORMAL REGISTRATION
- FULL PAYMENT must be settled before commencement of the course, otherwise participants will not be allowed to enter the hall. If a place is reserved and the intended participants fail to attend the course, the fee is to be settled in full. If the participant failed to attend the course, the fee paid is non refundable. Registration fee includes lecture notes, refreshment.
- The Organizing Committee reserves the right to cancel, alter, or change the program due to unforeseen circumstances. Every effort will be made to inform the registered participants of any changes. In view of the limited places available, intending participants are advised to send their registrations as early as possible so as to avoid disappointment.

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**ADVERTISEMENT BOOKING FORM  
(EVENT BOOKLET)**

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21st – 22nd June 2023 (Wednesday & Thursday)  
Organized by : Civil & Structural Engineering Technical Division (CSETD)  
Tel: 603-7968 4001/2 Fax : 603-7957 7678  
Email: shamalah@iem.org.my / shahrul@iem.org.my

Chairman, Civil & Structural Engineering Technical Division (CSETD),  
We would like to place an advertisement in the EVENT BOOKLET of the 2 day PREparatory course for the chartered membership examination of the institution of structural engineers (20th & 21st june 2023) as indicated below and attach herewith

cheque no. .... for the sum of RM ..... made payable to “THE INSTITUTION OF ENGINEERS, MALAYSIA” being our booking fees:-

| Tick (✓) | Location                    | Adv rate    | Complimentary Participant Seat | Promotion Table @ Registration Foyer Only |
|----------|-----------------------------|-------------|--------------------------------|---|
|          | Outside Back Page (Colour)  | RM 6,000.00 | 3 seats                        | 1 table 2 chairs                          |
|          | Inside Front Page (Colour)  | RM 4,500.00 | 2 seats                        | 1 table 2 chairs                          |
|          | Inside Back Page (Colour)   | RM 4,500.00 | 2 seats                        | 1 table 2 chairs                          |
|          | Inside Run of Page (Colour) | RM 2,500.00 | 1 seats                        | nil                                       |

**PAYMENT DETAILS**

- ACCOUNT NAME : THE INSTITUTION OF ENGINEERS, MALAYSIA
- ACCOUNT NUMBER : 232-303-911-0
- BANK NAME : UNITED OVERSEAS BANK (UOB)
- BANK ADDRESS : NO 2-6, JALAN TENGAH, 46200 PETALING JAYA, SELANGOR
- SWIFT CODE : UOVBYK1025
- EMAIL ADDRESS FOR RECEIVING REMITTANCE ADVISE : FINANCE@IEM.ORG.MY/SHHRUL@IEM.ORG.MY/SHAMALAH@IEM.ORG.MY

**CONTACT INFO**

|                         |             |  |             |  |
|-------------------------|-------------|--|-------------|--|
| <b>Contact Name:</b>    |             |  |             |  |
| <b>Organisation:</b>    |             |  |             |  |
| <b>Designation</b>      |             |  |             |  |
| <b>Mailing Address:</b> |             |  |             |  |
| <b>Contact Nos.:</b>    | <b>Tel:</b> |  | <b>Fax:</b> |  |
| <b>Contact Num</b>      |             |  |             |  |
| <b>E-mail:</b>          |             |  |             |  |

SIGNATURE \_\_\_\_\_

STAMP \_\_\_\_\_

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