

**2-Day Short Course on “The Essentials of Soil Behaviour for Modern Geotechnical Engineering Practice by Professor Jim Graham**

By Ir. Yee Thien Seng

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The IEM Geotechnical Engineering Technical Division (GETD) organised a 2-day short course on “The Essentials of Soil Behaviour for Modern Geotechnical Engineering Practice” on 11 and 12 November 2014 at the Tan Sri Professor Chin Fung Kee Auditorium. The course was conducted by Professor Jim Graham, formerly of the University of Manitoba, Canada. A total of 96 IEM members participated in the course.



The course presenter, Professor Jim Graham

mathematics. “It is a considerable advancement over the classical soil mechanics instructed in undergraduate civil engineering courses and hence it allows geotechnical engineers to meaningfully interpret soils test data,” said Professor Jim Graham.

The speaker described the modern geotechnical practice which draws research from the fields of soil mechanics, rock mechanics, engineering geology, mining engineering, geoenvironmental engineering, geosynthetics, geochemistry and hydrogeology.

The course emphasised the basics of comprehensive soil mechanics to allow a wide range of soil behaviours in response to changes in stress to be addressed reasonably well in a consistent manner backed by science and

Professor Jim Graham added, “The key issue is the advanced soil mechanics is constituted mathematically in elasto-plastic hardening conceptual material models in effective stress terms, such as Critical State Soil Mechanics and Modified Cam-Clay, where compression and shear behaviours of soils are addressed in an integral manner rather than being dealt with separately as in classical soil mechanics”.

Professor Graham provided evidence from laboratory and field tests to demonstrate the validity of such models together with worked examples for the participants to familiarize themselves with the concept where the Critical State line is the central feature. He also elaborated in greater details how water in soils exerts such an important role on geotechnical design and how it affects the behaviour of constructed geotechnical works.

From the course, participants were able to appreciate the significance of the input parameters needed to quantitatively describe the engineering characteristics of the ground when modeling geotechnical problems with sophisticated computer softwares used in the modern geotechnical engineering practice.