

PROCEEDINGS OF THE INTERNATIONAL CONFERENCE SHAKING THE FOUNDATIONS OF  
GEO-ENGINEERING EDUCATION, 4-6 JULY 2012, GALWAY, IRELAND

# Shaking the Foundations of Geo-engineering Education

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## Preface

The higher education sector worldwide is undergoing enormous change. Since about 1960, universities have moved from elite to mass education. For example, in the UK in 1979, just over one in ten young people entered higher education and by 2009, this had risen to over one in three. In many of the established higher education sectors, the proportion of international students has also increased significantly. In Australia (which in 2006, had the highest proportion of international students in its universities of any OECD country), the fraction rose from 8.5% in 1996 to 26.5% in 2007. Other substantial changes include increasing globalisation of tertiary education; diminishing public funding; greater government regulation; increasing student-staff ratios; greater student diversity; changing student expectations and demands; increased use of technology in teaching and learning; growing difficulty in attracting and retaining high quality academic staff; ageing academic workforce; and academic staff under greater pressure to perform in research. Furthermore, several educators predict that the nature of universities may be vastly different in the future, with online education and distance learning coming to the fore.

With this backdrop, it is particularly timely for the geo-engineering education sector to re-examine its position. *Shaking the Foundations of Geo-engineering Education* (SFGE 2012) is an international conference hosted at the National University of Ireland, Galway, Ireland, which seeks to build upon the success of two previous conferences held in Romania – the *First International Conference on Geotechnical Engineering Education and Training* held in Sinaia in 2000, followed by the *First International Conference on Education and Training in Geo-Engineering Sciences: Soil Mechanics and Geotechnical Engineering, Engineering Geology, Rock Mechanics*, held in Constantza in 2008. SFGE 2012 is a major initiative of the ISSMGE's Technical Committee 306 on Geo-engineering Education. An important objective of the present conference, over those that preceded it, is the active engagement with the significant body of learning and teaching research that has been accumulating for many years in the fields of higher and engineering education.

The organizers of SFGE 2012 aspire to deliver a landmark international symposium that will leave an enduring legacy of valuable ideas and innovations to the global geo-engineering education community. The five invited keynote lectures have been chosen to prompt delegates to debate geo-engineering education issues in the context of best practice in engineering education. A further 36 contributed papers offer worthy experiences and insights on the following topics in geo-engineering: what topics should be taught; teaching through case histories; the role of laboratory work and fieldwork; computing and technology; research on engineering education, teaching experiences and student-centred learning. Each of the papers has been peer-reviewed by at least two reviewers. The conference organisers are grateful for the assistance of the reviewers in arriving at this high quality set of papers.

The SFGE organisers are confident that the conference will be memorable, enjoyable and a technically-valuable experience for all in attendance and that the proceedings will be a source of inspiration for effective and engaging geo-engineering education worldwide for years to come.

Bryan McCabe  
Marina Pantazidou  
Declan Phillips



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