

Accreditation, Licensing, and Specialization - Is a Bachelor's Degree Enough?

Licensing as a professional engineer or geoscientist in Canada requires a Bachelor degree from an accredited program, or equivalent qualifications. It also requires additional years of supervised practical experience as a Professional-in-Training.

The Canadian Engineering Accreditation Board (CEAB) currently directs Bachelor programs towards a broadly-based *education* in engineering. Many employers accept the need for a broad education, but also want young engineers to have specialist *skills-training* for practice. These requirements appear at first sight to be difficult to reconcile.

Mechanical engineering and electrical engineering programs in Canada and the United States are sufficiently focused that they produce graduates who can work directly in practice under guidance. Civil engineering is much more diverse. Areas like water resources, environmental, transportation, and geotechnical engineering have only two, or rarely three, introductory undergraduate term-courses. These are insufficient to provide the detailed skills required by many employers. Many young civil engineers now take MSc or PhD programs in a specialty area. For example, it seems that 85% of geotechnical engineers have Masters degrees. The average period before becoming a licensed engineer in civil engineering is nine years, and often eleven years if it includes an MSc program.

In the United States and Europe, licensing bodies are moving towards a requirement for a Masters degree (or equivalent) for licensing. Currently, Engineers Canada and CEAB show little interest in this approach. Some companies that engage in international projects may be unable to compete if other countries require Master degrees for licensing, while Canada does not.

This session will discuss the current regulatory framework in Canada and what is happening in other countries. It will outline current policies of the Canadian Engineering Accreditation Board and how they influence universities' responses to the needs of employers of new graduates.

Speaker: Dr. James (Jim) Graham

Jim Graham holds BSc, PhD, and DSc degrees from Queen's University, Belfast, Northern Ireland.

He is a Fellow of the Engineering Institute of Canada and a Professional Engineer in the Province of Manitoba. He has been Scientific Editor of the Canadian Geotechnical Journal; and Vice-President Technical, President and until 2007, Secretary General of the Canadian Geotechnical Society.

TECHNICAL PROGRAM

He is currently Professor Emeritus, in the Civil Engineering Department at the University of Manitoba.

Dr. Graham has received many awards, including the Stirling and K.Y. Lo Medals of the Engineering Institute of Canada, the Medal for Distinction in Engineering Education from CCPE, the Saunderson Award for Excellence in Teaching from the University of Manitoba, and the highest award of the Canadian Geotechnical Society, the R.F. Legget Medal.

Dr. Graham's research interests have included failure loads in sands, yielding in soft natural clays, elastic viscoplastic modelling of settlements, unsaturated soil mechanics, slope stability, and the behaviour of road embankments on thawing permafrost. He acts as a reviewer for many research journals, research granting agencies, and consultants.