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If you can't grow it, you've got to mine it

TU Delft's Applied Earth Sciences department was the last stop on the European Mining Course's (EMC) eight-month sojourn across Europe. TU Delft, Imperial College London, and the universities of Aachen, and Helsinki played host to an international mix of students in what has been called a prototype for international education.

Mining's a dirty job, but somebody's got to do it, because%despite high-tech's claims%it's still the raw materials extracted from ground that power the wheels of our machine age. However, high-tech's glitz, gadgetry, and promises of Gatesian fortunes are causing the engineers of tomorrow to rush, like the gold miners of yesteryear, from their high schools to high-tech university faculties, leaving many of Europe's traditional university engineering programs, like mining, facing an enrollment slump.

The TU is no exception. Despite being one of the TU's oldest departments (dating from 1848), Applied Earth Sciences enrollment numbers are way down: In early 1990s, the faculty graduated 140 students per year. Today, it graduates 20 students annually; yet the departments target remains 50-60 students per year.

Faced with such meager pickings, the TU and other European universities are maintaining their core competencies but streamlining their programs and looking to cooperate internationally. The European Mining Course (EMC) is one such partnership-driven initiative involving Imperial College London, TU Delft, and the Universities of Aachen (Germany) and Helsinki. Each year an international mix of fourth-year mining engineering students spend two months at each of the four universities, where the students are taught subjects which the respective universities specialize in. Called a 'traveling circus education' by some, the highly successful EMC program is seen as a prototype for international education.

With TU Delft as the EMC group's last stop, Canadians Heather Mackenzie (23) and Daniel Hikita (24), from Queen's University, in Ontario, had a chance to reflect on their career choices and their eight-month European adventure. Coming from Canada, the third largest mining country in the world after Russia and Australia, they both knew from an early age that they wanted to one day work in mining. Mackenzie recalls her childhood fondness for digging in the sandbox and later being attracted to mining engineering because "I'd have the opportunity to blow things up and drive around in huge Tonka trucks."

Mining is one of the best paid and diverse engineering studies, requiring engineers to perform a variety of tasks, including contracting and site-design. "It's reverse construction," Hikita says, "the building of vast, interconnecting underground structures, and of course doing this as cost-effectively as possible." High-tech bubbles burst, but mining remains a steady business. "There are lots of jobs," Mackenzie says, "especially if you're willing to work in the middle of nowhere." Hikita and Mackenzie will do just that this summer, returning to internships at mines located in the Canadian wilderness.

Mackenzie loves the hands-on aspect of the job and looks forward to getting back

underground. "It's important to get your hands dirty working side-by-side with the miners," she says. "That's the only way to gain their respect and experience all aspects of the job."

Stereotypes

This year's EMC group was composed of three Canadians, an American, a Surinamer, Pole, Greek, two Finns, six Germans, and four Dutch students. This international mix is one reason why multinational mining companies are eager to help support the program financially. About 25% of mining graduates will work abroad, so the most desirable graduates are those who know how to work with foreigners and in foreign cultures.

EMC therefore concentrates on developing 'soft skills', like flexibility and interpersonal relationships. While at the TU, the students worked together to develop a business plan to mine and process iron ore. Although the EMC organizers had stressed the need for students to overcome thinking in terms of national stereotypes, once the project work started, Hikita and Mackenzie admit that most students conformed to their national stereotypes%especially the Germans.

Hikita was both amused and impressed. "Germans really attack a problem. The beginning phase involves a furious delegating of responsibilities, and then each person is responsible for producing their result. No excuses permitted. If you fail, you hear about it, loudly and directly." he says, smiling. "For Germans, perfect is *acceptable*. I like that."

The Canadians also noticed striking differences in how North Americans and Europeans approach problem-solving. "The North American way is to first find the solution and then test to see if is works. More trial and error and more risk-taking," Mackenzie says. "Europeans work on the problem, testing as they go along and then, based on this, they arrive at a solution."

After eight months in congested Europe, both are eager to return home to Canada, a country that's 275 times larger than the Netherlands. "I look forward to peace and quiet and wide open spaces," Hikita says. Although joining the program meant that Mackenzie and Hikita would miss out on their final year graduation festivities back home, they have no regrets. "It's been an incredibly educational and fun eight months" Mackenzie says. "Learning to work and socialize with people of different nationalities has made me much more versatile."

David McMullin

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