

## Need for innovation multiplies math jobs

Prince George Citizen  
Fri 26 May 2006  
Page: 41  
Section: Career Opportunities  
Byline: Gina Teel  
Dateline: CALGARY  
Source: CanWest News Service  
Edition: Final  
Story Type: Business  
Length: 708 words  
Illustration: Photo: CanWest photo / Aaron Pratt, a University of Calgary mathematics graduate student, is living proof of the demand for mathematicians in a knowledge-based economy.

CALGARY -- Corner office occupants beware: the war for talent has a new contender vying for the title of hottest new recruit. But this highly calculating newbie is factoring into corporate strategies in a new way.

Mathematicians, it seems, are the up-and-coming, must-have additions to some company payrolls, now that math is one of the core sources for innovation in a supercharged, knowledge-based economy.

With algorithms and sophisticated mathematical modelling techniques driving much business innovation these days, math is much more important than brawn, said Alberta Ingenuity communications director Mary Anne Moser.

"Thirty years ago, you'd snicker thinking a mathematician could be useful, but it's really changed because the drivers of innovation have changed," she said.

University of Calgary mathematics graduate student Aaron Pratt is living proof that the push to hire mathematicians outside the classroom is no urban myth.

Pratt is working part-time at Direct Energy's Calgary office doing data analysis of energy prices and predictive mathematical modelling while working toward his masters at U of C.

"I don't know where I would have been without the opportunity," Pratt said of his Direct Energy gig.

The job arose from a relationship struck in 2005 when Pratt arrived at Direct Energy under a unique internship program offered by MITACS, or the Mathematics of Information Technology and Complex Systems.

MITACS is a national research network launched in 2003 to bring together top researchers and companies to solve industry problems in five of the economy's fastest growing sectors: biomedical and health, environment and natural resources, information processing, risk and finance and communications, and networks and security.

The internship program provides graduate students with an opportunity to address high-level research issues at a company using advanced mathematics.

During the internship, graduate students divide their time over one semester between researching a problem at a company (said problem is jointly identified by the partner, MITACS and the students' supervising professors) and advancing their own research at their university.

Last month, Alberta Ingenuity, which operates the \$1-billion Alberta Heritage Foundation for Science and Engineering Research, upped its funding to \$150,000 to the MITACS program to place top graduate students with, in this case, Alberta businesses.

The cash infusion doubles to 30 the number of graduate students in Alberta that will this year partake in the MITACS internship program.

Pratt said the internship program has shown him that math grads have a career alternative to academia, in addition to providing him with invaluable real-life business experience.

"It's definitely help for me because it's hard to get your foot in the door in a lot of ways just with a math degree," he said.

The internship program is mutually beneficial, said Janice Thomson, Direct Energy's senior vice-president of human resource, marketing and communications.

In addition to providing Direct Energy with access to cutting-edge research, the internship program presents an opportunity to establish relationships early on with students and different organizations, thus allowing companies to perhaps cultivate their own future workforce -- an important perk given the skill shortages around the world.

"Technology is driving all of our businesses into very high levels of sophistication, and the types of skills these folks bring to the table really contribute to that, and they are going to be the people (who) are going to help solve some of these things in the future," Thomson said.

Ditto for Shell Canada Ltd., which worked with U of C PhD student Jennifer Adams through the MITACS program.

Identified as one of Canada's 25 "Brightest and Best" in Maclean's magazine in 2004, Adams isn't a mathematician -- her masters is in hydrogeology -- but her research involved a numerical simulation of the biodegradation of oil.

"One of the things that is important for corporations like ours is finding ways to access this talent early and ensure that we can bring it into our doors in the end," said Lorraine Whale, manager of in situ oilsands research for Shell Canada.

Adams said she enjoyed the MITACS internship with Shell at U of C's Petroleum Reservoir Group so much that she's applying for another.

When it comes to mathematicians in her end of the energy business, however, Adams said it's important to integrate them with engineering and geology so they get the full picture.

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