

**Waterloo**  
FACULTY OF  
**ENGINEERING**

University of Waterloo  
Faculty of Engineering  
200 University Avenue West  
Waterloo, Ontario N2L 3G1  
519-888-4567, ext. 33863  
[www.engineering.uwaterloo.ca](http://www.engineering.uwaterloo.ca)



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**VISION** 2010 CAMPAIGN



it takes a team

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Waterloo is already one of the top engineering schools in Canada. We're best known for our undergraduate program, the largest and most successful co-op engineering program in the world.

# how do you improve on excellence?

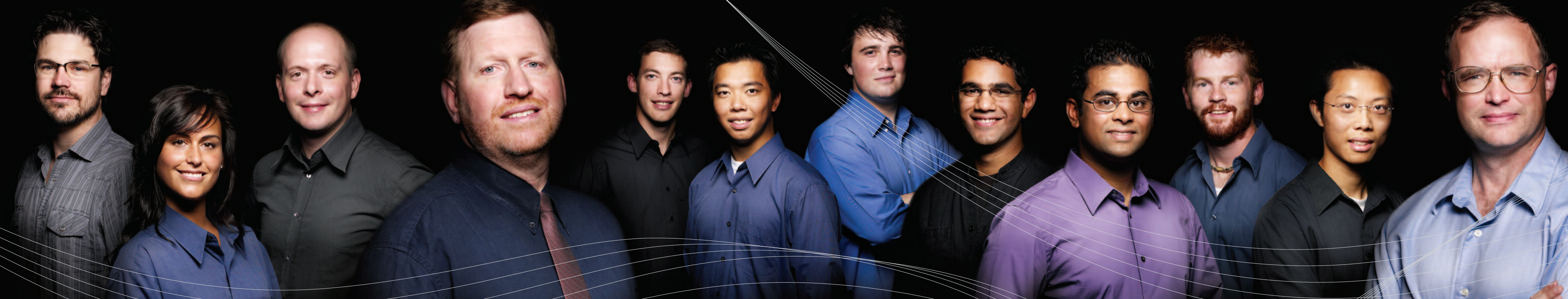
But in an increasingly complex and competitive world, undergraduate excellence is not enough. To respond to Canada's growing need for highly qualified personnel, we are expanding our graduate studies program. And in order to drive innovation and keep this country competitive, we are intensifying research efforts, building critical mass in our areas of strength.

Because there are no simple solutions to today's most pressing problems. It takes a team to solve them.

Waterloo is the only Canadian team competing in Challenge X. The goal of the competition: to design a vehicle that satisfies consumers while improving fuel economy, emissions and safety. Other schools chose to tweak conventional vehicles. We chose to reimagine a vehicle from the ground up - and power it with hydrogen.

Adel Sedra, Dean of Engineering, with members of the University of Waterloo Alternative Fuels Team - UWAF - and their Challenge X vehicle.





Faculty advisors Professor Mike Fowler and Professor Roydon Fraser (right) provide guidance and support to members of the Challenge X team.

We're launching the largest fundraising effort in our history –  
raising \$120 million – to make our vision a reality.

# we have high aspirations

Waterloo Engineering has an ambitious goal: to be widely recognized as the premier engineering school in Canada and counted among the leading engineering schools in North America.

And we have a blueprint for getting there: a strategic plan called Vision 2010. It includes detailed plans for expanding graduate studies, specific strategies for attracting more of the world's top researchers, and plans for new buildings that will increase our space by over 50%.

Waterloo's Challenge X SUV is the first fuel-cell vehicle to be built by students in North America. It took the energy of our undergraduates, the leadership of our graduate students, and the rich environment created by our researchers to accomplish this impressive feat.





One of our Vision 2010 goals is to raise \$23 million to create over 200 new graduate scholarships.

Graduate students teach and inspire undergraduates, are key members of our research teams and are crucial to our efforts to recruit and retain outstanding faculty members.

## we're dramatically expanding graduate studies

Expanding our graduate program will have benefits beyond the university. Waterloo Engineering alumni with graduate degrees hold academic posts at some of the world's top universities and play leading roles in government and industry across Canada and internationally.

Competition for the top graduate students is fierce. Offering top scholarships is essential to attracting the very best.

Jennifer Bauman led the Challenge X electrical team, the people with the tough job of figuring out how to use the power from a fuel cell to drive a vehicle. In the process, she built a highly specialized 65-kW DC/DC custom converter to control the fuel cell power. Jennifer has expanded on what she learned on the team and has developed a novel circuit topology which can make a converter of that size significantly smaller and lighter - and could make all electric cars lighter and more fuel efficient.

Jennifer Bauman, a doctoral student in electrical engineering, in the UWAFI team's garage with Professor Mehrdad Kazerani - her advisor - and undergraduate Alex Proracki.





To attract top researchers, we're raising \$30 million to endow 20 research chairs.

# we're increasing the intensity and impact of our research

Better artificial limbs, greener buildings, computers you can fold up and put in your pocket – the research we do at Waterloo makes the world a better place. It also produces economic prosperity and helps educate the next generation of engineers.

We want to do more of that research. We plan to increase research activity by creating endowed chairs to be held by researchers of international stature. They will attract leading young faculty members to Waterloo. Graduate students will join their research teams. New partnerships will be formed, new labs built, new discoveries made.

Waterloo has one of the largest groups of fuel cell researchers in Canada – people studying everything from the atom-by-atom structure of fuel cell membranes to the large-scale infrastructure of hydrogen distribution. That wealth of expertise and enthusiasm was key to the success of the Challenge X project.

Professor Mike Fowler, who studies the design of fuel cell stacks and systems, in the lab with his doctoral students, Sumit Kundu, Matthew Stevens and Jeff Gostick.





More than half of the \$120 million will go towards expanding our physical space.

Space is already an issue for us. Waterloo Engineering has grown steadily since our first building opened 50 years ago.

Expanding our graduate studies program and increasing research activity will create an urgent need for more space.

# bringing the vision to reality

We envision three new buildings and additions to existing buildings that will add more than 400,000 square feet to our existing 800,000 square feet – by far the largest physical expansion in our history.

There will be new classrooms, new research facilities, new student spaces, a major new student design center – in short, a fitting home for the best engineering school in Canada.

Our new engineering buildings will include a \$12 million, 20,000 square-foot space for our student teams. It will feature a new student machine shop, funded by the students themselves. The student-run Waterloo Engineering Education Fund has contributed \$1 million towards this new home for UWAFT and our other student teams.

UWAFT team member undergraduate Devin Cass in the student machine shop.