A team of five Western Engineering students placed second in the 2014 Innovative Designs for Accessibility (IDeA) Student Competition for their Phineas Sensor System—a sensor that emits a sound when swimmers who have visual impairments near the end of a pool, or runners make their way around a track. The team, including Joseph Santarelli and Nicole Kucirek (pictured) and Ahmed Tanashi, Justin Lam and Shuang Song, also won a bonus prize for their para-sport/active living submission.
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Executive Summary

In today’s complex global economy, real-world challenges are rarely one-dimensional. To remain competitive, employers recruit candidates with a broad range of knowledge and skills. When recruiting engineers, industry leaders are looking for employees who possess an understanding of the basic principles of business and corporate dynamics.

Furthermore, the combination of engineering and business skills offers outstanding employment opportunities, especially in the fast growing sector of small- to medium-sized companies.

**Engineering and Business—A Powerful Combination**

At Western, undergraduate students have the opportunity to develop skills in management, leadership and innovation with programs such as Integrated Engineering and the BESc/HBA dual degree program.

Students looking to enhance their undergraduate engineering education with entrepreneurial knowledge and innovation skills can complete a Certificate in Engineering Leadership and Innovation. This new academic collaboration between Western Engineering and the Ivey Business School, one of the top-ranked business schools in the world, aims to develop the next generation of global leaders.

In particular, students who complete this certificate learn how the fields of engineering and business intersect and how principles of business and management can enhance the implementation of engineering technologies.

Through this certificate, students not only design new products and processes, but acquire crucial business skills that will guide them through the process of transferring their ideas to market.

By combining business and management acumen with technical expertise, Western Engineering graduates will be well prepared to assume leadership roles in a rapidly evolving global economy.

**Leading the Way at Western**

Through the [John M. Thompson Chair in Engineering Leadership and Innovation](#), Western is bringing together engineering and business perspectives to create new opportunities on campus and beyond.

**Darren Meister, PhD**, an Associate Professor of General Management (Entrepreneurship and Innovation) at the Ivey Business School and faculty member in Western’s Department of Electrical and Computer Engineering, is the inaugural holder of the John M. Thompson Chair in Engineering Leadership and Innovation. Through this partnership between Western Engineering and the Ivey Business School, Western has the programs and activities that support the growth of engineering and innovation interest and expertise.

**Program Leadership:**

**Darren Meister, PhD**

**John M. Thompson Chair in Engineering Leadership and Innovation**

**Associate Professor of General Management (Entrepreneurship and Innovation), Ivey Business School**

**Cross-appointed to the Department of Electrical and Computer Engineering, Western Engineering**

Meister is focused on technology-based entrepreneurship and the role of technology in enhancing organizational effectiveness, specifically as it concerns innovation processes.

As the holder of the John M. Thompson Chair in Engineering Leadership and Innovation, Meister is combining his business and engineering expertise to create new opportunities for Western students, faculty and industry partners.
Executive Summary

A Vision for the Future

Our vision for the future is to energize and accelerate the integration of traditional engineering and business perspectives to create technology-based entrepreneurial opportunities for Western students, faculty and industry partners. This will be accomplished by establishing a Centre for Engineering Leadership and Innovation.

Western is committed to raising $5 million to support the development of the Centre for Engineering Leadership and Innovation.

The Centre will connect engineering students with businesses to identify challenges that are difficult to solve with existing technologies. By harnessing the expertise and resources available at Western, students, researchers, entrepreneurs and industry partners will work together to build development paths for technological advancements and potential innovative solutions that address the world’s big problems and contribute to economic growth.

The Centre will also provide engineering students with a sound understanding of the business processes they are likely to encounter in their careers and prepare graduates to solve problems in their technical fields within the context of a business organization—corporate or entrepreneurial.

Impact of Donor Support

We turn to our alumni, friends and organizations to support the development of the Centre for Engineering Leadership and Innovation. With your support, Western Engineering and the Ivey Business School will collaborate on multiple dimensions, outside of traditional academic boundaries, and will ultimately be regarded as the premier destination for:

• Technology Innovation
• Engineering-Based Business Development
• Leadership in Engineering Organizations

Thank you for reviewing this information.
Why Western?

Western has long recognized the potential synergy and benefits of combining comprehensive technical knowledge with managerial skills.

Considering the following factors, Western is in the ideal position to advance leadership in the area of Engineering and Business.

- **The Ivey Business School**—Ivey is one of the top-ranked business schools in the world, and home to the Pierre L. Morrissette Institute for Entrepreneurship. Recognized globally as a premiere resource for entrepreneurship research and education, the Institute serves new business ventures from start-up to succession.

- **The Faculty of Engineering**—Western Engineering delivers unique learning opportunities and disseminates knowledge for the benefit of society through excellence in teaching, research and scholarship. Western Engineering graduates are global citizens whose education and leadership serve the public good.

- **Engineering and Business Dual Degree**—Western Engineering and Ivey offer a dual degree program at the undergraduate level. For this five-year program, engineering students complete their first two years in Engineering and then join the HBA program in third year. The final two years are a combination of the two undergraduate programs.

  More than 100 students are currently enrolled in the BESc/HBA dual degree program. In recent years, two Engineering/Ivey graduates were recognized as Rhodes Scholars—the oldest and perhaps the most prestigious international scholarship in the world.

- **Engineering Leadership and Innovation Certificate**—students completing this certificate learn how the fields of engineering and business intersect and how principles of business and management enhance the implementation of engineering technologies. Through cases and other experiential learning, students collaborate on teams and develop resiliency, creativity and personal leadership skills.

  The Certificate is open to engineering students in their second or third year. In addition to their BESc degree, students must complete a Business Administration course and courses in Engineering Innovation and Leadership: New Venture Creation, Innovation, Engineering Leadership and the Entrepreneurial Environment.

- **Integrated Engineering**—unique in Canada, Western’s Integrated Engineering curriculum incorporates case-method engineering innovation courses plus core courses from civil, chemical, electrical and mechanical engineering. Students participate in class lectures, engineering laboratories and tutorials in courses such as business administration, venture creation, and marketing and design thinking.

In recent years, two BESc/HBA graduates were named Rhodes Scholars: Brian Coulter in 2009 and Joelle Faulkner in 2005.
Teaching Programs

Business skills form a core component of any engineering discipline. With this in mind, Western aims to embed a business perspective in all Western Engineering graduates.

The following priorities are necessary to develop an entrepreneurial mind-set that is applicable in either start-up or corporate entrepreneurship:

• Recruit a second faculty member to focus on entrepreneurship opportunities and teach core courses;

• Increase enrolment in Engineering Leadership and Innovation courses through programs and certificates;

• Enable students to gain exposure to industry through lectures, seminars, case studies and internship opportunities;

• Establish additional scholarships for students in the Engineering/Ivey programs (including the BESc/HBA as well as the BESc/MSc and MEng/MBA—both to be launched in 2016);

• Evaluate and revise the undergraduate engineering curriculum (for example, we are considering redesigning the common first year curriculum to include an Introduction to Business course to create a powerful, transformative experience and develop a true business-technical perspective in every Western Engineering student);

• Expose students to business courses earlier in the program to encourage more students to develop and adopt a business mind-set.

A Word from the Chair

“Business and social enterprises that combine effective leadership with technology innovation form the backbone of economic and social prosperity.

Students want to make a difference and more frequently they see entrepreneurship as the means to do so. By creating collaborative opportunities between Ivey and Western Engineering for students and faculty with industry partners, we are forming the basis for lifelong partnerships that will change Canada and global society.

This is an exciting time and I’m proud to lead Western’s efforts in this area.”

—Darren Meister, PhD
John M. Thompson Chair in Engineering Leadership and Innovation
Case Writing

Adopting Ivey’s Case Study Method

The Ivey Learning Experience uses case studies to analyze the business issues managers face every day—not fictitious scenarios but actual real-world problems. Ivey’s commitment to real-world knowledge and expertise in the classroom develops extraordinary leaders and extraordinary careers.

By presenting the challenges faced by actual companies, students assume the role of decision maker. The classroom becomes a type of business simulator where students can test their thinking and judgment in a low-risk, supportive environment and get instant feedback that they can incorporate into their learning.

The current nature and timeliness of the case discussions can also create opportunities to invite executives from the featured companies into class to provide a perspective simply not possible from a textbook.

Cases are used extensively throughout Ivey’s HBA, MBA and Executive Development programs.

Case Writing

As part of the John M. Thompson Chair in Engineering Leadership and Innovation, case studies in the area of Engineering Leadership and Innovation are being developed for use at Western and at other universities and corporations around the world.

On average, each case costs approximately $15,000 to produce. With private sector support, Western is committed to building a library of relevant cases, giving students and professors the opportunity to investigate the most topical and challenging business and engineering issues in the classroom.

Our goal is to write and publish 30 cases to be used in the Engineering Leadership and Innovation program.

Renowned for its case method, Ivey Business School is one of the largest case-writing schools in the world alongside Harvard.
Outreach

Under the direction of the John M. Thompson Chair in Engineering Leadership and Innovation, we plan to bring together business and university community members to address industry challenges through technology.

**Proposed activities include:**

- Organizing quarterly workshops for interested fee-paying parties who would define a core challenge in an industry or cross-industry;
- Defining a deliverable to share on the project and identify specific opportunities for research and industry collaboration for delivery within a six month period;
- Facilitating the creation of institutes, centres, and working groups to focus on identified needs;
- Inviting industry partners to work at Western Engineering on an 'industry sabbatical' for two to three months so they can have access to our people and resources.

These outreach initiatives will identify early stage technology opportunities and accelerate the opportunity for researchers, industry representatives and entrepreneurs to come together to address the challenges.

We also plan to create a **Technology Leadership Council** to bring together 10-12 individuals who have completed university degrees in both business and engineering to serve as an Advisory Council. This council would focus on the leadership mandate of the Chair and provide valuable curriculum advice.

The Council could test and discuss abridged versions of teaching cases. These discussions would help bring the curriculum to life for these participants and provide valuable teaching insights for faculty.

Funds will enable the Chair to work with industry partners to develop workshop themes and manage an ongoing agenda.

Outreach initiatives currently underway include the **Engineering Leadership and Innovation Speaker Series**. Launched in 2014, the Series is open to all members of the Western community who are interested in technology-based entrepreneurial opportunities. Past speakers include:

- Dennis Cocco, serial engineering entrepreneur, Founder & President of 10in6 Inc.
- Dave Reed, BESc’98, Founder of Forked River Brewing Company
- Ian Hasse, Director of Student Entrepreneurship at Western
- Colton Hathaway, BESc ’13, Founder & CEO of Inner Geek

The Speaker Series brings real-world entrepreneurial knowledge to faculty, staff, students and alumni. We plan to continue to attract engineering leaders to inspire our community and explore engineering leadership and innovation at Western.

**Engineering Leadership and Innovation Speaker Series**

**Speaker Profile**

Colton Hathaway, BESc ’13
Founder & CEO, Inner Geek

Inner Geek is a software engineering company specializing in branding, design, and mobile app development.

Hathaway is in charge of business development, strategic planning, talent recruitment, and capital management at Inner Geek.

In 2011, Apple selected him as one of the top 150 student developers worldwide.

In 2012, he was accepted into Hyperdrive, one of Canada’s top tech accelerators.

Hathaway has cofounded four companies, worked on dozens of mobile and web application projects, and currently leads a team of 15 designers and developers.
Research

Academic programs rely on a solid research foundation to ensure that teaching and research initiatives are rooted in existing realities but able to adapt to developing trends within Canada and around the world. A stable funding source will enable us to:

- Design, coordinate and implement various research projects;
- Develop research projects by recruiting research teams and by participating in conferences, workshops or seminars;
- Investigate opportunities to leverage funds through various external funding agencies;
- Actively promote, recognize and disseminate the research accomplishments of faculty that may, in turn, lead to collaborative research opportunities.

Research in Engineering Leadership and Innovation

No organization can solve the world’s most challenging problems by working alone. Collaboration across traditional boundaries accelerates the pace of progress for researchers, scientists and industry partners working on important issues.

Western Engineering plans to develop a Research Collaboration Accelerator. The Accelerator will provide researchers and students at Western Engineering with the necessary resources (engineering and business courses, workshops, physical space, etc.) to encourage collaboration with industry with the aim of developing solutions to industrial challenges.

Under the leadership of the Chair, the research program will be focused on three research topics. These are:

- How do the first customers of a new venture affect its long-term technology and market development? How does the leadership team learn from the experiences with the first customers?
- How do firms learn about and integrate new technology opportunities into their business development plans?
- How do serial entrepreneurs move from non-technology entrepreneurship to technology based entrepreneurship?

Funds will support elements such as a postdoctoral fellow, visiting faculty, data collection and a white paper series.

Collaboration across traditional boundaries accelerates the pace of progress for researchers, scientists and industry partners.
**Investment Opportunities**

Western is committed to raising $5 million to support the development of the Centre for Engineering Leadership and Innovation.

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<tr>
<th>ELI Component</th>
<th>Impact</th>
<th>Investment</th>
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<tbody>
<tr>
<td>Teaching Programs</td>
<td>Develop new curriculum for undergraduate and graduate courses</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Case Writing</td>
<td>Create cases and materials to offer case-based learning</td>
<td>$750,000</td>
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<tr>
<td>Outreach</td>
<td>Offer the Speaker Series, colloquia, industrial visitors program and entrepreneurial support</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Research</td>
<td>Support research projects, data collection, and white paper series</td>
<td>$750,000</td>
</tr>
<tr>
<td>Endowed Chair</td>
<td>Lead efforts to facilitate engineering-based entrepreneurship in collaboration with the Thompson Chair</td>
<td>$1,500,000</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$5,000,000</strong></td>
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**Benefits and Recognition for Donors**

Prospective donors have the opportunity to encourage and support engineering students as they develop business skills to complement their technical knowledge. Furthermore, the Centre for Engineering Leadership and Innovation will facilitate collaboration among the Western community and industry partners to develop solutions to industrial challenges.

Recognition opportunities are contingent upon and guided by the level of donor support and may include naming opportunities, membership in Western’s 1878 Societies, media announcements, campus visits and regular reporting on the impact of donor’s gifts.

Thank you for reviewing this information brief.