

4. Undergraduate Students

In 2008–2009 the Faculty welcomed 1,090 extraordinary First Year students with an entering average of 88.9%, the highest in Ontario. Continuing a recent – and important – trend, entering averages have risen alongside retention rates.

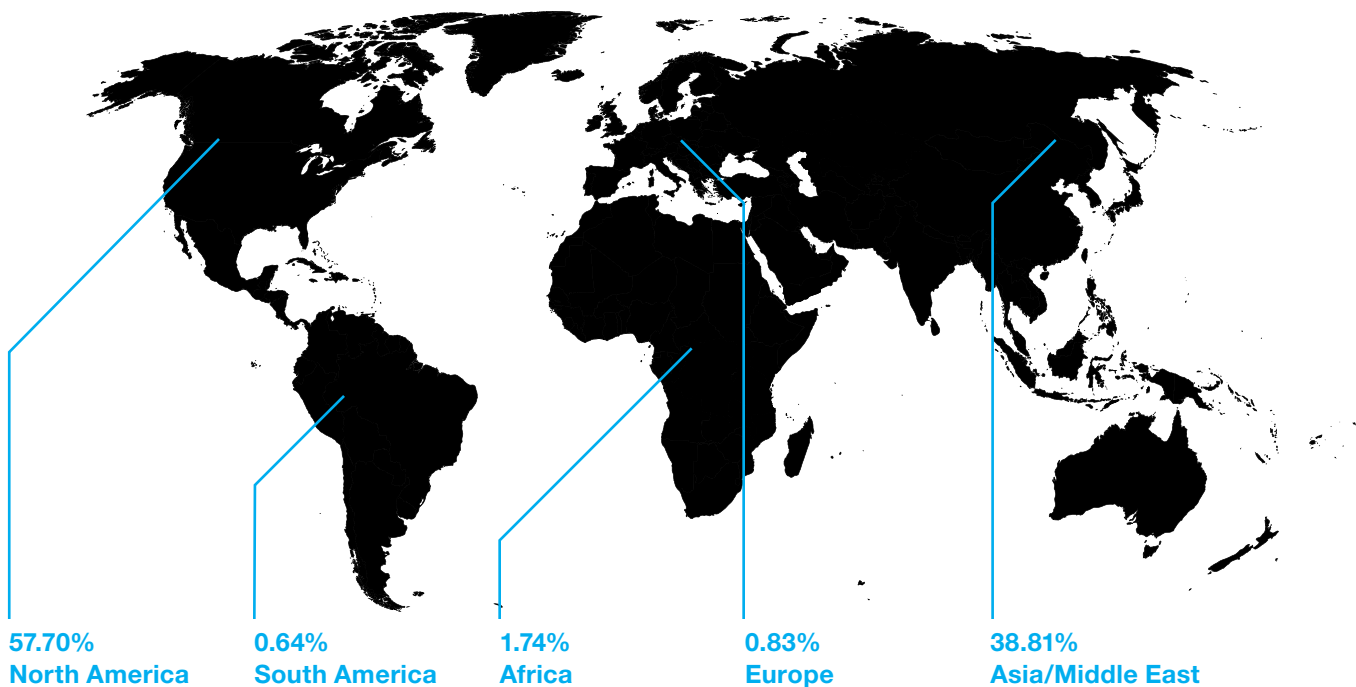
At the same time, the 2008–2009 entering class is our most diverse. Students arrived at the Faculty from all 10 Canadian provinces, 45 countries, and every continent. The First Year international student population in the Faculty increased to 18.9% in 2008 from 14.1% in 2007. Indeed, more than 40% of our undergraduate students can claim cultural heritage from beyond the geographic borders of North America.

Our undergraduate students will participate in an innovative and evolving curriculum. This past year, the Faculty added two new Minors – one in Sustainable Energy and a second in Environmental Engineering. A new Major in Energy Systems Engineering was launched in 2008 for Engineering Science students. The Faculty has also distinguished its Engineering Science program with a unique designation upon graduation: the BASc in Engineering Science.

Co- and extra-curricular programming have developed in step with the Engineering curriculum. The Galbraith Scholars Program, created for academically gifted students, joins the Faculty's pioneering Professional Experience Year Internship Program and Engineering Leaders of Tomorrow in enhancing the student experience and furthering the academic mission of the Faculty. The energy and enthusiasm of our undergraduate population is reflected in some 59 student clubs ranging from the Nanoclub to the U of T Concrete Canoe team.

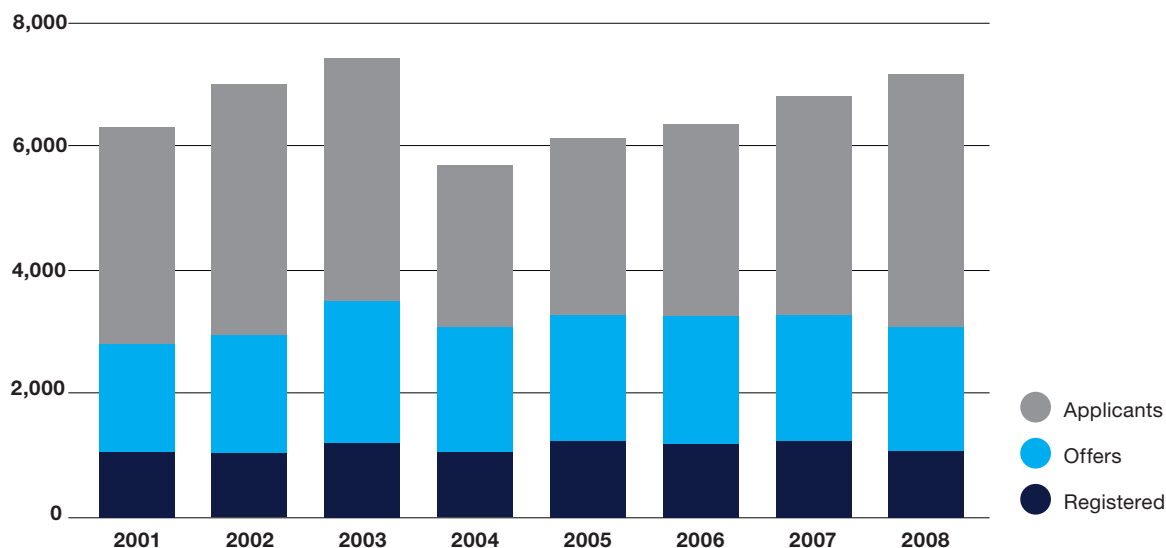
Constantly striving to foster student engagement, the Faculty and the Engineering Society hosted successful Dean's Town Hall assemblies. Initiated by the Dean in 2007–2008, these gatherings provide a forum for faculty and students to discuss goals and plans, to respond to questions and to address concerns.

Figure 4.1
Cultural Heritage of Undergraduate Students
Fall 2008



Note: Not shown – 0.28% from Oceania, which includes Australia, New Zealand, and other countries in the Pacific Ocean. Cultural Heritage is derived from a combination of citizenship, location(s) of previous studies (e.g. elementary, high school, university, etc.) and permanent address. This information does not indicate current Canadian immigration status, which is used to determine domestic/international student status for tuition and funding purposes.

Figure 4.2
Applications, Offers, Registration, Yield and Selectivity of First Year Undergraduate Students
2001–2008



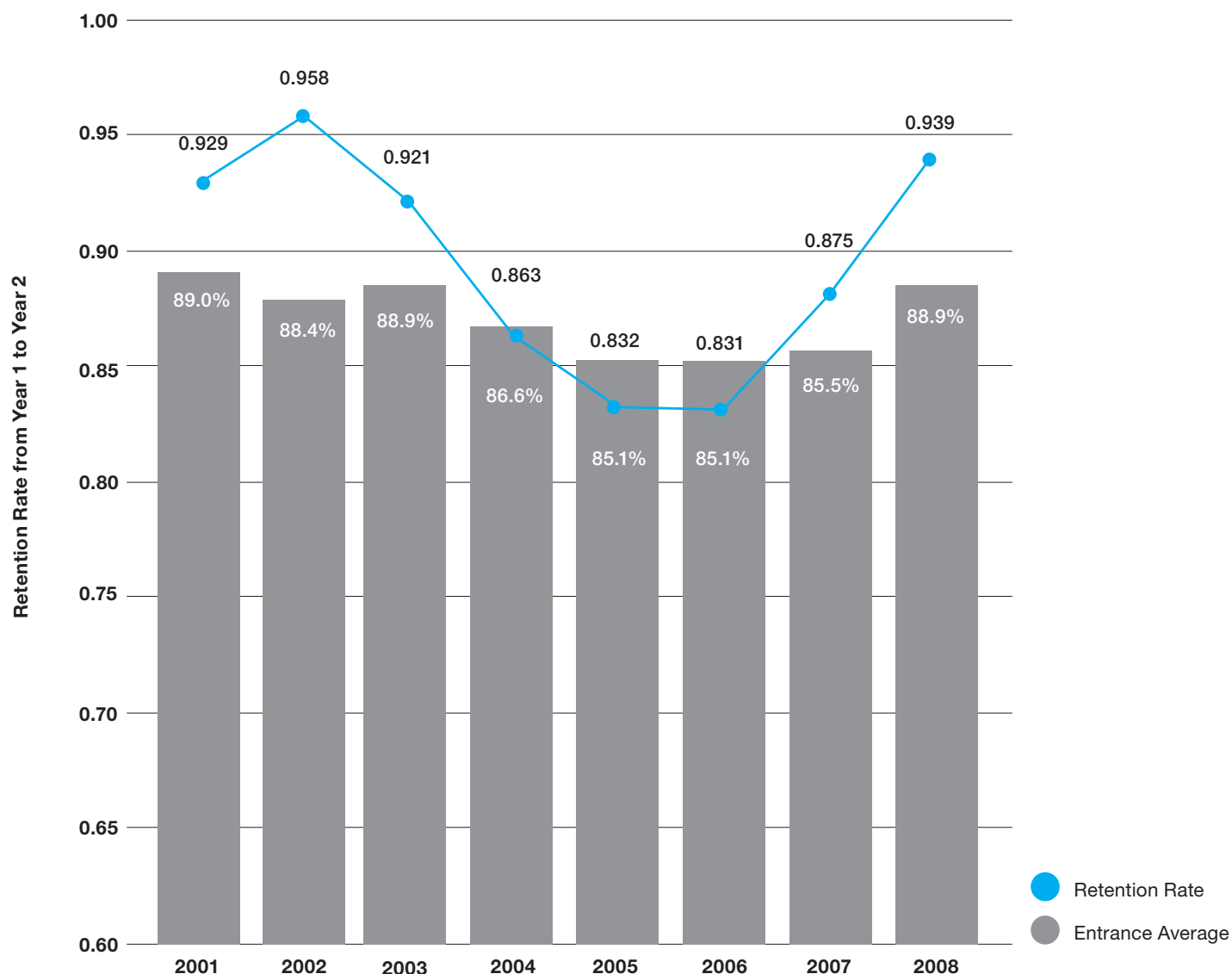
Applications	6,339	7,026	7,454	5,715	6,163	6,383	6,829	7,185
Offers	2,822	2,965	3,513	3,094	3,290	3,276	3,300	3,107
Registered	1,051	1,022	1,200	1,064	1,236	1,201	1,235	1,090
Selectivity*	0.45	0.42	0.47	0.54	0.53	0.51	0.48	0.43
Yield**	0.37	0.34	0.34	0.34	0.38	0.37	0.37	0.35

Note: Registered First Year students as of Nov. 1.

* **Selectivity** = Offers ÷ Applications

** **Yield** = Registered ÷ Offers

Figure 4.3
Ontario Secondary School Averages of Incoming First Year Undergraduate Students and
Retention Rate Between First and Second Year
Fall 2001 to Fall 2008



There is a strong correlation between the incoming average of our First Year class, and the retention of students into Second Year.

2003 was a noteworthy year for the Faculty – this year marks a significant change in Ontario secondary school curriculum due to the elimination of Ontario Academic Credits (OAC). As such, virtually all Ontario applicants entering from 2004 and onward received four years of high school education in the revised curriculum.

To compensate for this curriculum change, the Faculty adjusted its curriculum to match and reflect the changes in Ontario.

We have made substantial efforts to increase retention through offering enhanced instruction for our First Year students and revising our mathematics courses in First Year. We also built support systems to help younger students cope in a rigorous Engineering curriculum through programs such as Success 101 – a free summer program allowing incoming First Year students to learn study skills and other strategies for First Year success.

Figure 4.4
First Year Undergraduate Student Headcount with Percent Women and International Students
2001–2008

In 2008, 1,090 First Year students joined the Engineering community. This was the most diverse First Year class in our 135-year history, with students from all 10 Canadian provinces, 47 countries, and every continent.

We are seeing a slight upward trend in female enrolment in the last two years after a peak in 2002. Efforts to attract more women undergraduate students have expanded to include: increasing the number of female faculty members; participating in female-specific recruitment events (e.g. Go Eng Girl); and organizing mentorship programs, such as Skule™Sisters – which partners female U of T Engineering students with female high school students interested in engineering.

There has been a steady increase in international students due to two main factors: 1) Our strategic recruitment activities outside North America, including Malaysia, Hong Kong, and the United Arab Emirates; and 2) The far reaching reputation of our Faculty as a world leader in engineering education. The Faculty aims to further diversify our international student population.

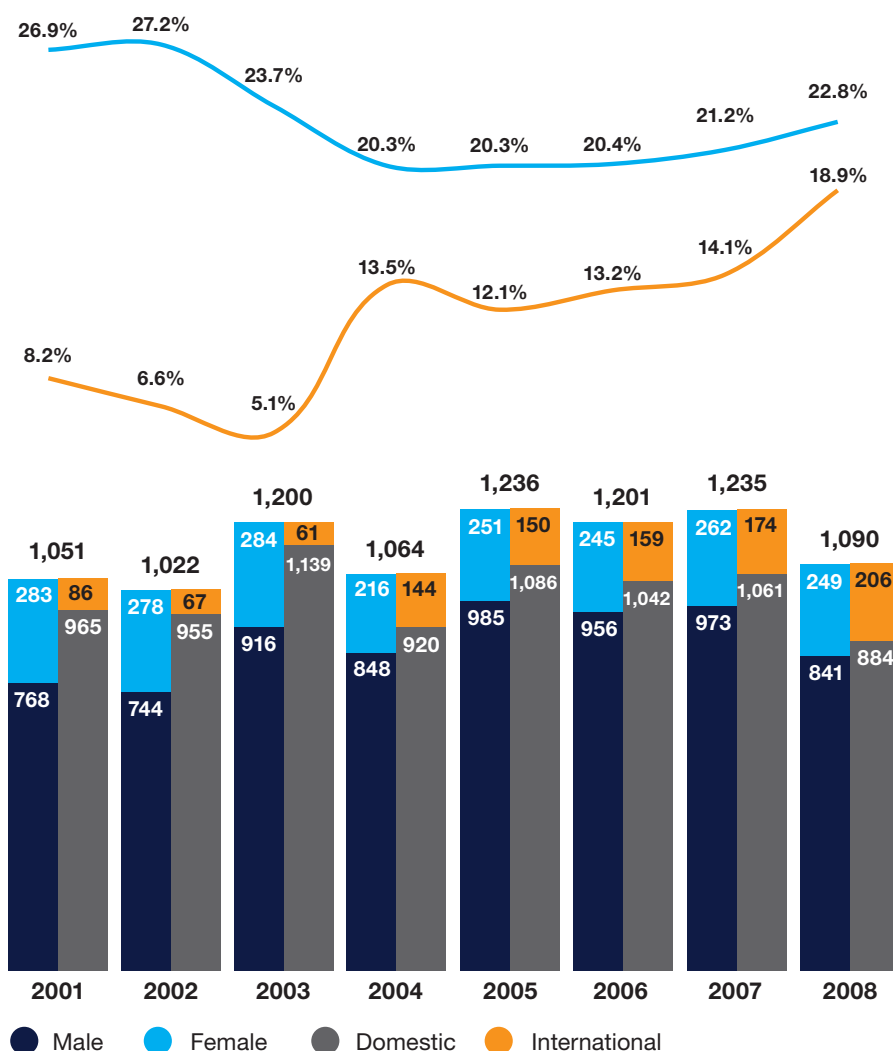
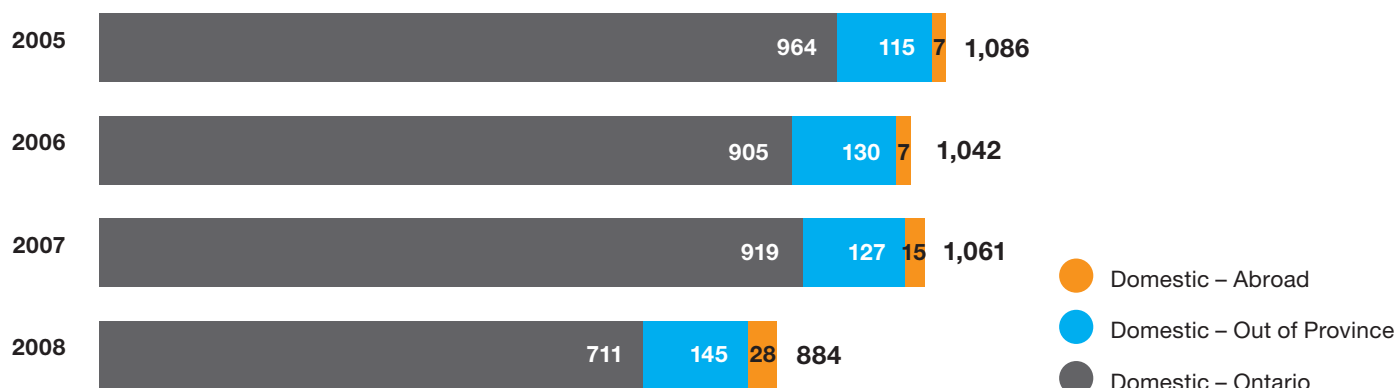
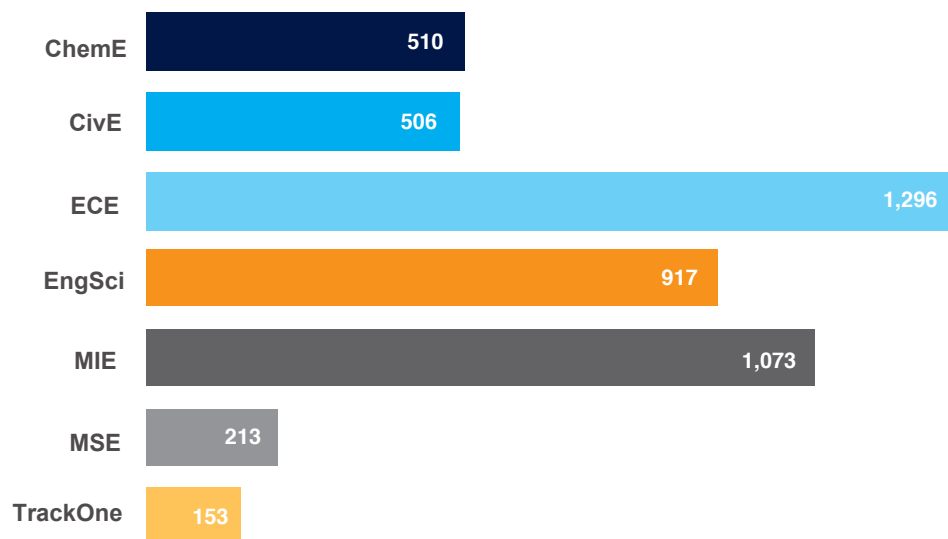


Figure 4.5
First Year Domestic Undergraduate Student Headcount
2005–2008



Note: Domestic students are defined as students who are citizens or permanent residents of Canada.

Figure 4.6
Undergraduate Student Headcount by Academic Area
Fall 2008



Engineering undergraduate students are enrolled in five Departments (Chemical Engineering & Applied Chemistry, Civil Engineering, Electrical & Computer Engineering, Materials Science & Engineering, and Mechanical & Industrial Engineering), one Division (Engineering Science), and a general First Year (TrackOne).

Created in 2007, TrackOne is a First Year entry point into Engineering where students choose which of the 8 “Core” Engineering programs they want to pursue after First Year.

Figure 4.7
Full-Time Equivalent Undergraduate Students
Fall 2001 to Fall 2008

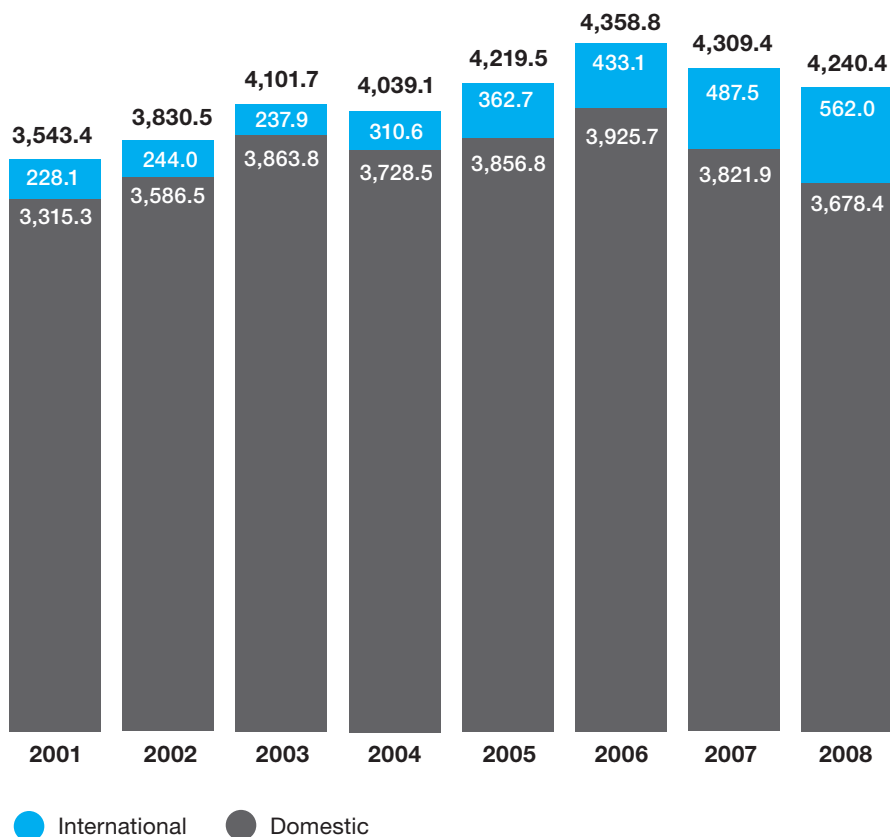


Figure 4.8
Full-Time Equivalent Undergraduate Students
by Year of Study
Fall 2008

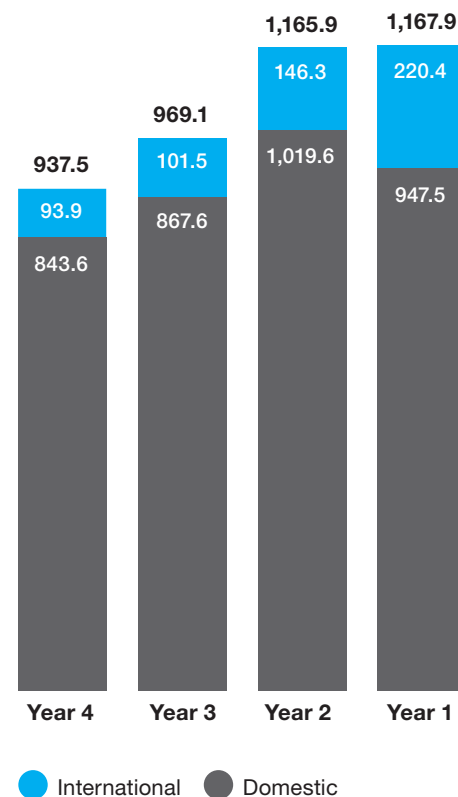


Figure 4.9
Undergraduate Student Headcount by Academic Area
2000–2001 to 2008–2009

As illustrated in the figure below by showing progressively larger circles over the years, the undergraduate student population has grown by 34.6% from 2000–2001 to 2008–2009.

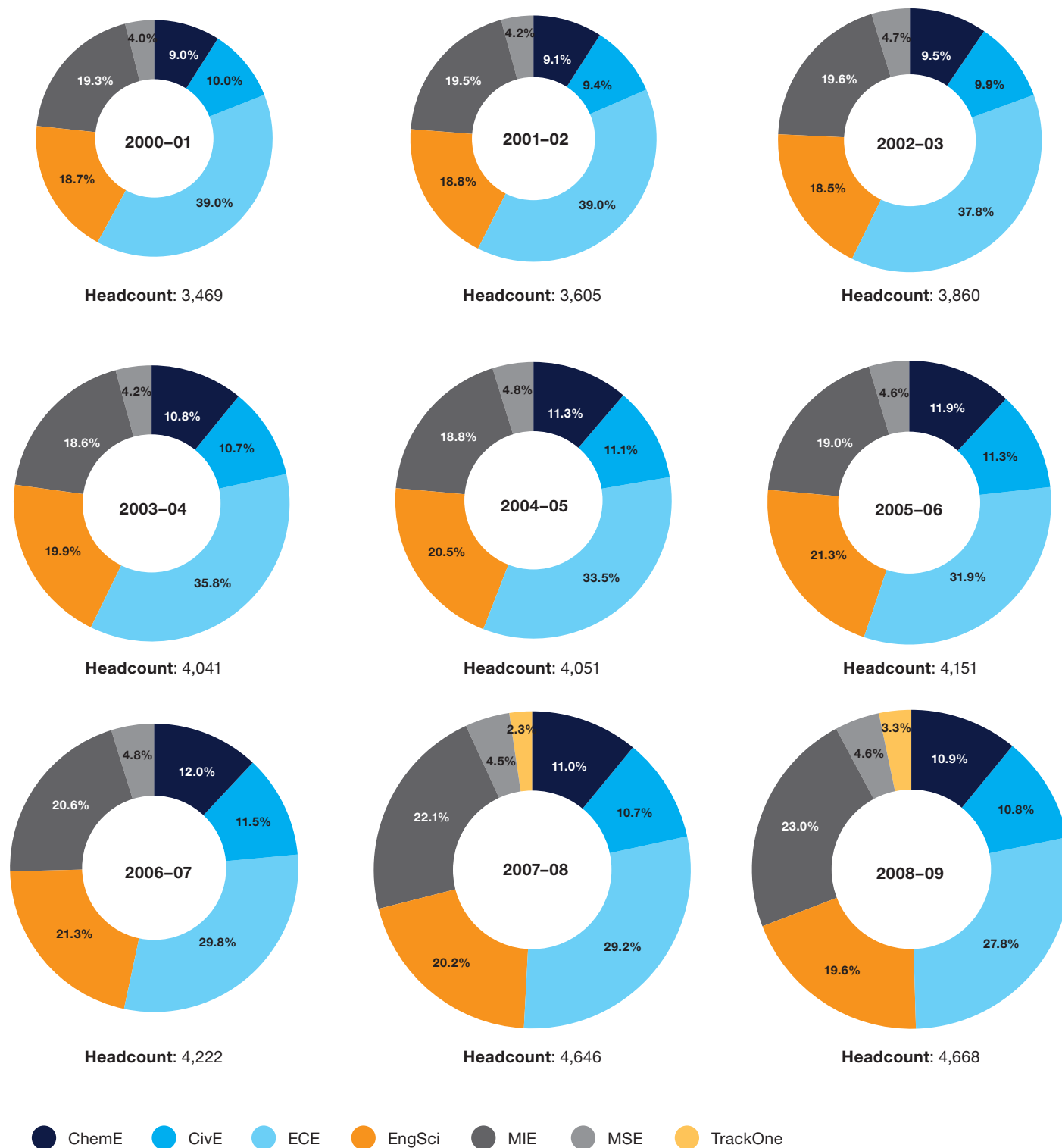
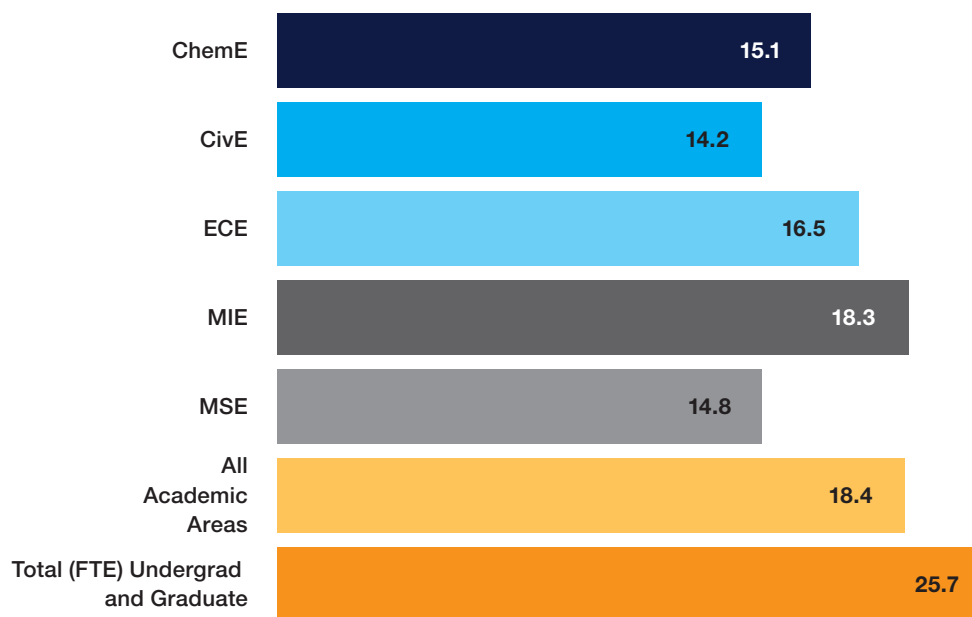
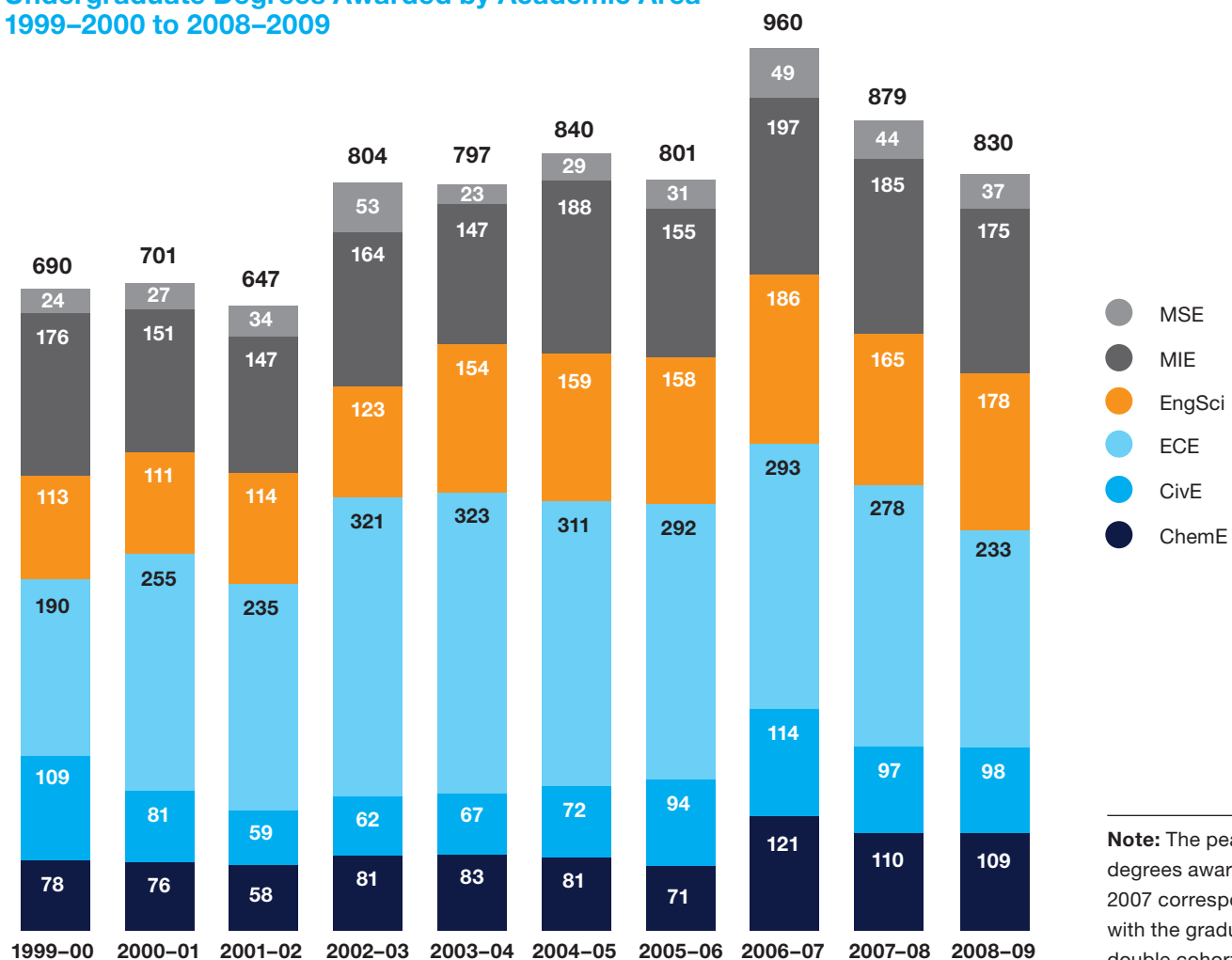


Figure 4.10
Full-Time Equivalent Undergraduate Student-Faculty Ratios by Academic Area
2008–2009



Note: The ratio of 18.4 for All Academic Areas is calculated based on 4,240.4 undergraduate FTE students, representing students in all Departments, Engineering Science, and TrackOne. Faculty members who interact directly with undergraduate students were included in the ratio calculation. The total number of faculty includes Assistant Professors, Associate Professors, Professors and Lecturers from all Departments, plus 1 Lecturer from Engineering Science and 4 Lecturers from the Engineering Communication Program. Total (FTE) Undergraduate and Graduate (MAsc, MEng and PhD) ratio of 25.7 includes all faculty including 1 Lecturer from Engineering Science and 4 Lecturers from the Engineering Communication Program.

Figure 4.11
Undergraduate Degrees Awarded by Academic Area
1999–2000 to 2008–2009



Note: The peak of 960 degrees awarded in 2006–2007 corresponds roughly with the graduation of the double cohort.

New Undergraduate Programs

Undergraduate Engineering Minors: Sustainable Energy and Environmental Engineering

Undergraduate Engineering students are able to supplement their program of study with an Engineering Minor. Adding to the existing Bioengineering Minor, the Faculty created two new Minors in 2009 to address the growing demand for energy and environmental engineering solutions for the world:

- 1) Sustainable Energy Minor
- 2) Environmental Engineering Minor

The Sustainable Energy Minor offers students the unique opportunity to learn about every aspect of energy, from its production, sustainable use and distribution, to managing demand, storage and public policy.

The Environmental Engineering Minor provides students with a broad understanding of the environmental responsibility that comes with being an engineer in terms of considering designing solutions that are sustainable and have environmental impact.

The Faculty is coordinating all minors through a new Cross-Disciplinary Programs Office.

Undergraduate Degree: BASc in Engineering Science

As of June 2009, the Faculty of Applied Science and Engineering began issuing two distinct undergraduate degrees: the traditional BASc and the BASc in Engineering Science. The Engineering Science class of 0T9 was the first class to receive the new degree title. As one of the only Faculties in the world to offer a distinct Engineering Science program, the new degree will help employers and graduate schools better identify students who have graduated from Engineering Science.

Engineering Science Majors: Energy Systems Engineering and Combined Electrical & Computer Engineering

New in 2008, the Energy Systems Engineering Major in Engineering Science prepares students to innovatively address the challenge of global energy generation and management. This unique program addresses both traditional and renewable forms of energy. The curriculum draws from many discipline perspectives, including civil engineering, mechanical engineering, chemical engineering, electrical engineering, public policy and environmental science.

Formerly, Engineering Science students could choose either Electrical Engineering or Computer Engineering as their Engineering Science Major. In 2009, Engineering Science combined these areas of study into one Major to allow students a broader education in these interrelated fields.

Engineering Student Clubs and Teams

The student-run Engineering Society is responsible for enhancing the student experience within the Faculty through advocacy, events, support and special interest clubs and teams. These clubs and teams range from engineering-related (e.g. U of T Formula SAE Racing Team) to social (e.g. Rise and Improvise Dance Club). Below is a listing of clubs and teams created for and by Engineering students at U of T. Select achievements are highlighted below.

Athletic

Engineering Athletic Association
Skule Climbing Club

Cultural

Chinese Engineering Students' Association
Engineering Chinese Culture Club
Iranian Engineering Students' Association
Korean Engineering Students' Association
National Society of Black Engineers

Design

BlueGenes
U of T Aeronautics Team
U of T Blue Sky Solar Racing
U of T Concrete Canoe Team
U of T Eco-Marathon Club
U of T Formula SAE Racing Team
U of T Mechatronics Design Association

Discipline Clubs

Undergraduate Chemical Engineering Club
Undergraduate Civil Engineering Club
Undergraduate Computer Engineering Club
Undergraduate Electrical Engineering Club
Undergraduate Engineering Science Club
Undergraduate Industrial Engineering Club
Undergraduate Materials Engineering Club
Undergraduate Mechanical Engineering Club
Undergraduate Mineral Engineering Club
Undergraduate TrackOne Club

During the National Convention in Las Vegas in 2008–2009, NSBE U of T Vice President, Ayokanmi Falade, was awarded with the “Fulfilling the Legacy” Scholarship in recognition of his demonstrated commitment to fulfilling the NSBE mission: “To increase the number of culturally responsible black engineers who excel academically, succeed professionally and positively impact the community.” NSBE U of T received an honorable mention for the NSBE Chapter Award which is an extraordinary honour considering that there are more than 233 NSBE chapters worldwide. The 2010 NSBE Conference will be held in Toronto, and hosted by U of T’s NSBE Chapter.

Placed 13th out of 31 teams, in the SAE International Aero Design Regular Class Competition, and 9th out of 15 teams in their first entry into the Micro Class competition.

Ranks 4th in the world out of 505 student teams that compete in Formula SAE competitions worldwide. U of T’s Formula SAE team was the only Canadian team in the top 10 ranking and second in North America. This ranking is conducted by the Formula Student World Organization.

The Club's Bollywood Team placed first in Commerce Idol, and the Salsa Team placed 6th in the Rhythm Dance competition in Brantford, Ontario.

Performance

Rise and Improvise Dance Club
Skule™ Improv
Skule™ Nite
Skule™ Orchestra
Skule™ Stage Band
Skule™ Stage Band Blue

Since 1921, Engineering students and alumni have acted, directed, written, designed and performed a live comedy production called, Skule™Nite. After a brief hiatus in the late 1960s, Skule™Nite has been going strong – bringing audiences new themes each year with spirit, enthusiasm and dedication.

Professional

Astronomy and Space Exploration Society
Career Paths
Club for Undergraduate Biomedical Engineering
Engineers Without Borders, U of T Chapter
Friends of Interdisciplinary Research in Medicine
Institute of Industrial Engineering
Material Advantage at the U of T
Nanoclub
National Business and Technology Conference
Ontario Water Works Association
Surface Mount Technology Association
U of T International Society of Pharmaceutical Engineering
U of T Student Chapter of the Water Environment Association of Ontario
U of T Consulting Association
U of T Engineering First Responders
U of T Engineering Toastmasters
Women in Science and Engineering

Co-President of Engineers Without Borders (EWB), Mike Klassen (EngSci 1T0) is one of several Engineering students involved in summer volunteer programs in Africa through EWB. Stationed in Zambia, Klassen was introduced to government staff working on water issues, HIV/AIDS, community development and health, as well as NGO's like PLAN International, Development Aid from People to People and Total Control of the Epidemic. Klassen and others like him help bring the voices of villagers to the table when designing and implementing interventions that address the needs of villagers. For his contributions, Klassen was recently recognized with the Leaders of the Future Award by EWB and the Professional Engineers of Ontario Foundation for Education. To learn more, please visit: www.reflectiveaction.wordpress.com

Publications

Crumpled Paper Arts and Creative Writing Magazine
The Cannon
The Toike Oike

Social

Blue and Gold
Cinema Blue Room
Engineering Lego Group
Engineers For Christ
Eyes of Hope
For the Love of Film: a society for film hobbyists
Lady Godiva Memorial Band
Skule™ Juggling Club
University of Toronto Engineering Photography Club

Eyes of Hope brings together students who believe that Engineering is about making society a better place for present and future generations. This year the Club raised funds for the following: \$3,500 for Habitat for Humanity; \$1,800 for World Vision and \$4,700 for the Free the Children school in Sierra Leone. Eyes of Hope also sent 110 volunteers to Habitat for Humanity to help build homes for low-income families. This summer, Eyes of Hope will initiate a Faculty-wide challenge to fund-raise and build a "U of T-sponsored Habitat for Humanity home" for a local low-income family.

Engineering Leaders of Tomorrow

The Engineering Leaders of Tomorrow program (LOT) is a comprehensive student leadership development program. Through curricular, co-curricular and extra-curricular programming LOT promotes and facilitates the development of engineering leaders. Our vision: 'An engineering education that is a life-long foundation for transformational leaders and outstanding citizens.' We believe that engineers have an important role to play and that engineers with technical expertise and leadership skills are better positioned to create positive change both in their professions and their communities. We also believe that in the wake of complex global challenges, energy, water, and climate change issues to name a few, engineers who have developed as leaders will be better equipped to contribute solutions.

Established in the Department of Chemical Engineering and Applied Chemistry in 2002, the Engineering Leaders of Tomorrow initiative has expanded in 2008 to include other Engineering departments and hundreds of students. In the last academic year a total of 200 leadership events were held resulting in 8,000 student contacts.

The program is administered by the Engineering Leadership Development Office. LOT programming includes two senior level academic courses. 'Leadership and Leading in Groups and Organizations,' is taught by Professor David Colcleugh, former President of Dupont Asia-Pacific and, later, of Dupont Canada. Students apply for this sought-after course and 40 students are admitted. 'The Cognitive and Psychological Foundations of Leadership,' to be piloted in fall 2009, is taught by Dr. Robin Sacks.

Galbraith Scholars Program

For academically gifted applicants, we created the Galbraith Scholars Program in 2008. To qualify as a Galbraith Scholar, applicants must have an incoming average of at least 96%. As a Galbraith Scholar, students have access to exclusive events, activities and opportunities that enhance the overall undergraduate and First Year experience. For September 2009, we had 297 admitted students qualify as Galbraith Scholars. Of these students, 137 accepted their offers. This 39% yield corresponds to a 14% increase from 2008.

In Fall 2008 a Curriculum Infusion initiative was launched and six lectures were introduced to undergraduate students at all levels. These lectures are entitled:

- Engineering Leadership
- Developing Personal Potential
- Leading in Teams
- Developing Vision
- Leadership and Citizenship
- Reflection and Personal Growth

The goal is to encourage students to identify as leaders and to inspire students to see how their technical skill can be empowered by their ability to effectively lead themselves and others. Twenty-one curriculum infusion lectures were given last year to 2,400 students.

The Engineering Leaders of Tomorrow Program also offers a co-curricular certificate program on 'Team Skills.' Students attend four experiential workshops and complete a reflection paper to be rewarded a certificate. A second certificate program entitled 'Leading from the Inside-Out' will be launched in September 2009.

The Engineering Leaders of Tomorrow Program offers students tremendous opportunity to engage in their own development, to be part of an exciting community of learners, to expand their own capability, and to place their technical skill in a broader societal context. It is our intention to enhance student experience, to encourage and empower student leadership development, and to strengthen the connection between the engineering profession and society, enabling graduates to contribute more fully to positive social change.

As part of their First Year experience, the Faculty supports the formation of a Galbraith Scholar student organization through a facilitated community development process. The first cohort of Galbraith Scholars is now entering their Second Year, and is actively shaping the development of their organization. They have started a speaker series called GSymposia, which invites speakers from a wide variety of research areas to share expertise with our students. The emerging mission of this organization is to bring opportunities for intellectual exploration to students in our Faculty.

Professional Experience Year Internship Program

Celebrating its 30th anniversary, the Faculty’s optional Professional Experience Year (PEY) Internship Program is the nation’s largest and oldest undergraduate paid internship program. The Program provides opportunities for students to work for 12 to 16 months after Second Year or Third Year of studies, and then return to class to complete their degree and reflect on their experience. PEY Internship is open to all eligible local and international U of T Engineering undergraduate students. In 2008–2009, more than 55% of Third Year students participated.

In 2008–2009, 537 Engineering undergraduates were hired at over 250 corporate, government, non-profit and small-size employers across the world. Collectively, PEY Internship students earn in excess of \$25 million per year and provide a considerable return on investment for their employers.

One of the reasons for the extraordinary success of the PEY Internship Program is its integrative approach to student career development and preparation. Before the Internship, students participate in a series of workshops and one-on-one counselling to develop job skills, identify opportunities that fit their career

objectives, and market themselves effectively in resumes, cover letters and interviews. During their Internship, students apply what they have learned in the classroom to the projects they tackle on the job and further develop self-awareness in relation to the workplace. The length of the Internship provides students with enough time to be involved in large-scale projects, build relationships, and reach professional milestones.

The Internship experience also adds to a new graduate’s marketability in an exceedingly competitive job market. Students who complete a PEY Internship often return to school with a job offer in hand. The experience also gives new graduates the ability to negotiate a higher salary in their first full-time job following graduation when compared to non-PEY students.

The PEY Internship Program is working to increase the number of international students participating in PEY Internship and to grow the number of international opportunities. In 2008–2009, 61 international students participated in PEY and international placements increased by 62% with 47 students working in countries that include: Bangladesh, Belgium, Botswana, France, Hong Kong, Japan, Korea, Switzerland and the U.S.

Figure 4.12a
PEY Internship Placements for Engineering Students
2000–2008

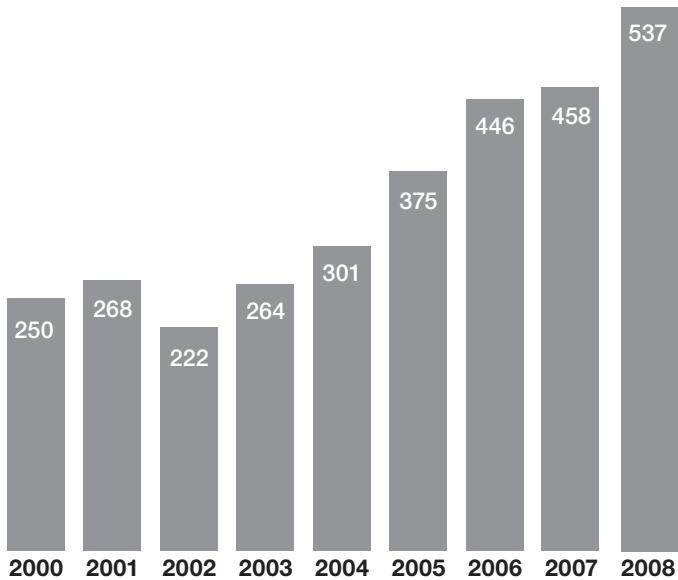


Figure 4.12b
Canadian and International PEY Internship
Placements for Engineering Students
2004–2008

	Canadian Placements	International Placements
PEY 2004	275	26
PEY 2005	348	27
PEY 2006	423	23
PEY 2007	427	31
PEY 2008	490	47

Note: PEY internships are available for Engineering and Arts and Science students. All data above represent Engineering placements only.