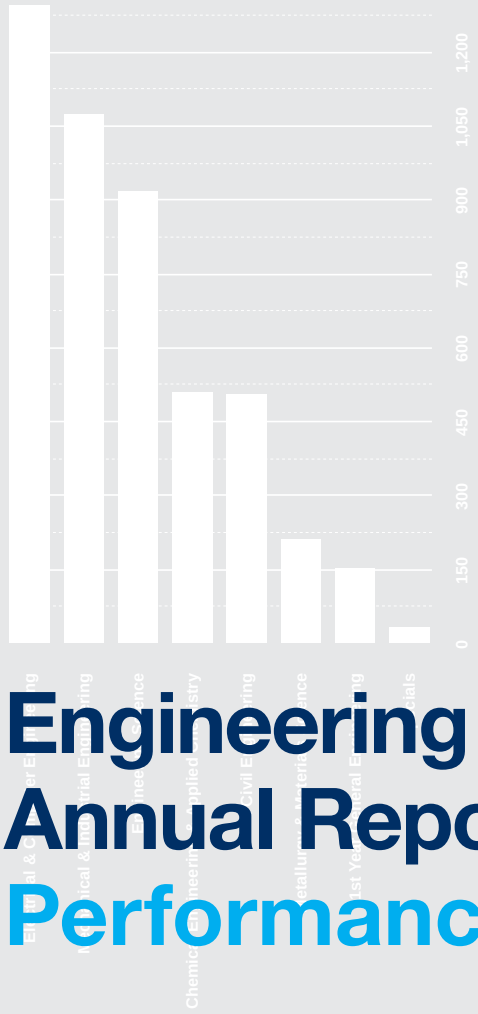
UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING




# Engineering Faculty's Annual Report 2009:
# Performance Indicators

# Table of Contents

# Dean's Message

It is my privilege to introduce the Faculty's inaugural annual report of performance indicators, metrics, and statistics.

This annual report presents data from 2008–2009 and compares them with both historical data from the Faculty and with corresponding figures from our peer institutions. This report will play a pivotal role in guiding the self-study and academic planning efforts which we are implementing within the context of the University's broad *Towards 2030* strategic initiative. Moreover, beginning with this first edition, our annual reports will be the milestones by which the Faculty will measure its progress and mark its dedication to excellence.

I would like to express my deep gratitude to each member of the Faculty whose collaborative efforts have informed and enriched this report. As we consulted, compiled, refined and considered this document, a number of stories emerged about our Faculty. I am pleased to highlight a few such stories and I encourage you to read the entire report for a comprehensive picture of our shared achievements.

### Comparisons and Rankings

The Faculty of Applied Science and Engineering is the premier engineering institution in Canada. Indeed, the Faculty is recognized by its peers around the world for its excellence: in October 2009, we were ranked #1 in Canada and #8 in the world by the Times Higher Education-QS World University Rankings. While our preeminence in rankings assists with recruiting top scholars and students, broad comparisons tell only part of our story. This annual report fills in the gaps, revealing a vibrant, diverse, and innovative community that strives for – and often achieves – excellence along many dimensions.

### Faculty

We continue to recruit and retain internationally renowned faculty characterized by their commitment to teaching and by the significance of their research – both of which are attested to by the notable honours and considerable funding they receive. Since 2007–2008, 25 highly promising accomplished junior scholars have joined our dynamic and diverse learning community.

### Awards and Honours

Over the past few years, our faculty members have received a growing number of awards and honours in recognition of their contributions to education, research, and service. This past year was no exception: our faculty received 31% of all major international and national awards given to Canadian Engineering faculty. The Faculty Committee on Nominations for Honours and Awards was created in 2007 and continues to strengthen our awards program by helping to produce outstanding recognitions for our Faculty.

### Undergraduate Students

The Faculty attracts and engages a diverse and talented group of undergraduate students. Joining an already gifted undergraduate community, the entering class of students in 2008 was the most diverse in our Faculty's history and had the highest academic qualifications of any cohort entering an Engineering program in Ontario. Our undergraduates excel in the Faculty's pioneering and innovative curriculum, join in co-curricular programming, and become well-rounded, outstanding graduates. They will go on to join our alumni, many in leadership positions, advancing Canada's innovation agenda, contributing to our national economy, and building a stronger global society.

Our curriculum continues to evolve. This year we introduced progressive Minors in Sustainable Energy and Environmental Engineering. Our expanded co-curricular programming is rich in experiential learning, which helps students gain skills in professionalism, global awareness, leadership, and communication and complements the strong technical foundations of our curriculum. Last year more than 55% of Third Year students undertook a Professional Experience Year and over 200 events were held through the Engineering Leaders of Tomorrow program. These and similar extra- and co-curricular programs enhance the student experience and form lasting relationships between the Faculty and students that extend far beyond graduation.

### Graduate Students

The Faculty recruits the very best graduate students from Canada and around the world. Their contributions enrich and strengthen the Faculty, adding to its excellence, diversity, and global perspective. Our programming has evolved in step with our goals to build graduate enrolment excellence. Since 2006, we have created the Prospective Professors in Training program and unique, cross-Faculty ELITE (Entrepreneurship, Leadership, Innovation and Technology in Engineering) and EPP (Engineering and Public Policy) graduate certificates which complement our Master of Engineering program.

### Research

Our Faculty members are recognized leaders in their fields, whose contributions help shape our country's innovation agenda and economic prosperity. These achievements are recognized not only in their impact on society, but also through: awards and honours; the largest share of NSERC funding over the past five years; the highest number of invention disclosures recorded at U of T; 24 Canada Research Chairs, four Industrial Research Chairs, and 28 Endowed Research Chairs; and more than 100 spin-off companies.

### Multidisciplinary Education and Research

Collaborative and cross-Faculty educational and research programs build upon our innovative academic excellence and expand the breadth of academic and research opportunities for faculty and students. In the past year, we created the Centre for Global Engineering, and the Identity, Privacy and Security Institute. In response to the growing number of multidisciplinary initiatives within our curriculum, we created a Cross-Disciplinary Programs Office, which coordinates cross-Faculty Minors and certificates, including our new Minors in Sustainable Energy and Environmental Engineering.

### Globalization and Diversity

We are creating an educational paradigm that works across cultures and disciplines to prepare our graduates to address the unparalleled possibilities, responsibilities, and challenges facing the next generation of engineering leaders. This initiative is manifested in the creation of the Centre for Global Engineering and will continue to be reflected in our progressive curriculum.

The cultural, ethnic, academic and geographic backgrounds of our students, faculty, alumni and staff bring us closer to our goal of becoming a truly inclusive and global community. Moreover, in the past two years enrolment among female and international student has grown substantially. At the same time, we have recently developed new mentoring opportunities for students and, as of 2008, 37% of our assistant professors are women, a three-fold increase over three years.

### Physical Infrastructure

Our Faculty's commitment to academic and research excellence depends upon excellent facilities. Only with a physical infrastructure to match the calibre of our faculty and students can we realize our aspirations to be a world leader among Engineering Schools. The Faculty's Divisional Space Review, conducted in 2008–2009, found that our facilities do not reflect the current or future needs of our scholars and students. To begin to address this urgent priority, we recently completed or commenced several projects, including a $20 million renovation of the Mining Building. In addition, our ambitious plans remain at the heart of our advancement and funding priorities and we look forward to more projects underway in the near future.

### Finances

Like other divisions of the University – and indeed many other institutions around the world – we have been challenged by the absence of expendable earnings from endowments due to the global downturn in capital markets. However, our cumulative efforts over the past two years to streamline operations and increase revenues have well positioned the Faculty to meet this year's budgetary strain proactively and with responsibility. Though it was not without sacrifice and compromise on the part of the collegium, we balanced our 2008–2009 budget while retaining and enhancing the critical initiatives that are a priority to our academic mission.

---

This report marks the beginning of an annual reporting process that will assist us in assessing our progress in our unwavering pursuit of academic excellence. At the same time, this report, together with those that will succeed it, reflects our Faculty's commitment to accountability and transparency.

I would welcome your feedback. Please consider sending your comments and input to help refine and expand our quantitative measures.

Reflecting on these stories of the past couple of years, I hope you will agree that there is much to be proud of and much to celebrate. I look forward to continuing our momentum into 2009–2010, and collaboratively building upon our outstanding Engineering programs; we will have many more shared stories yet to tell.

Cristina Amon, Dean

# Comparison of U of T Engineering with Ontario and Canadian Engineering Faculties

**Figure 1**
**Undergraduate, Master and PhD Student Enrolment (Full-Time Equivalent) and Degrees Awarded with Percentage of Women**
**2007–2008**

| | | U of T Engineering | Ontario | Canada |
|---|---|---|---|---|
| Undergraduate Students | Total Undergraduate Students (FTE) | 4,190.9 | 22,932.2 | 55,728.9 |
| | Women Students | 906.0 | 4,026.2 | 9,624.7 |
| | International Students | 433.1 | 2,217.9 | 5,926.8 |
| | Total Undergraduate Degrees Awarded | 943 | 5,341 | 11,439 |
| | Undergraduate Degrees Awarded to Women | 243 | 1,093 | 2,162 |
| Master Students | Total Master Students (FTE) | 598.0 | 3,475.8 | 9,934.8 |
| | Women Students | 161.0 | 809.2 | 2,218.7 |
| | International Students | 116.0 | 724.1 | 2,969.6 |
| | Total Master Degrees Awarded | 308 | 1,369 | 3,386 |
| | Master Degrees Awarded to Women | 95 | 377 | 808 |
| Doctoral Students | Total Doctoral Students (FTE) | 568.3 | 2,406.3 | 6,602.4 |
| | Women Students | 132.7 | 485.1 | 1,291.2 |
| | International Students | 133.3 | 775.9 | 2,409.1 |
| | Total Doctoral Degrees Awarded | 95 | 365 | 833 |
| | Doctoral Degrees Awarded to Women | 13 | 55 | 132 |

**Note:** Annual undergraduate enrolment represents average enrolment levels, taking into account registrations in all three terms/semesters of the year (fall, winter and summer). Degrees awarded are provided for the 2007 calendar year. Data compiled by Engineers Canada: www.engineerscanada.ca

# Comparison of U of T Engineering with St. George Campus and University of Toronto

**Figure 2**
**Student Enrolment (Headcount), Degrees Awarded, Number of Administrative and Academic Staff, Funding, Revenue and Space**
**2008–2009**

| | U of T Engineering | St. George Campus | University of Toronto |
|---|---|---|---|
| Graduate Students (MEng, MASc and PhD) | 1,476 | 13,153 | 13,702 |
| Doctoral Students | 606 | 5,218 | 5,404 |
| Undergraduate Students | 4,668 | 34,827 | 55,352 |
| All Students | 6,144 | 47,980 | 69,054 |
| Undergraduate Degrees Awarded | 830 | 7,920 | 11,278 |
| Professional Master Degrees Awarded (MEng) | 136 | 2,022 | 2,169 |
| Research Master Degrees Awarded (MASc) | 202 | 1,366 | 1,404 |
| Doctoral Degrees Awarded | 97 | 691 | 706 |
| Professoriate | 209 | | 2,260 |
| Lecturers | 22 | | 432 |
| Full- & Part-Time Administrative & Technical Staff | 243 | | 10,896 |
| Sponsored Research Funding | $60,974,305 | $379,389,083 | $397,290,373 |
| Total Revenue | $132,300,000 | N/A | $1,250,400,000 |
| Space (Net Assignable Square Metres) | 62,333 | 613,098 | 765,712 |

**Note:** All student enrolment (headcount) statistics include degree-seeking students only (e.g. excludes students seeking diplomas or certificates and those with special status). University of Toronto and St. George Campus student enrolment and degrees awarded statistics exclude students from Toronto School of Theology. Degrees granted statistics are based on the 2008–2009 academic year. Sponsored research funding is based on 2008 calendar year.

# 1. Comparisons and Rankings

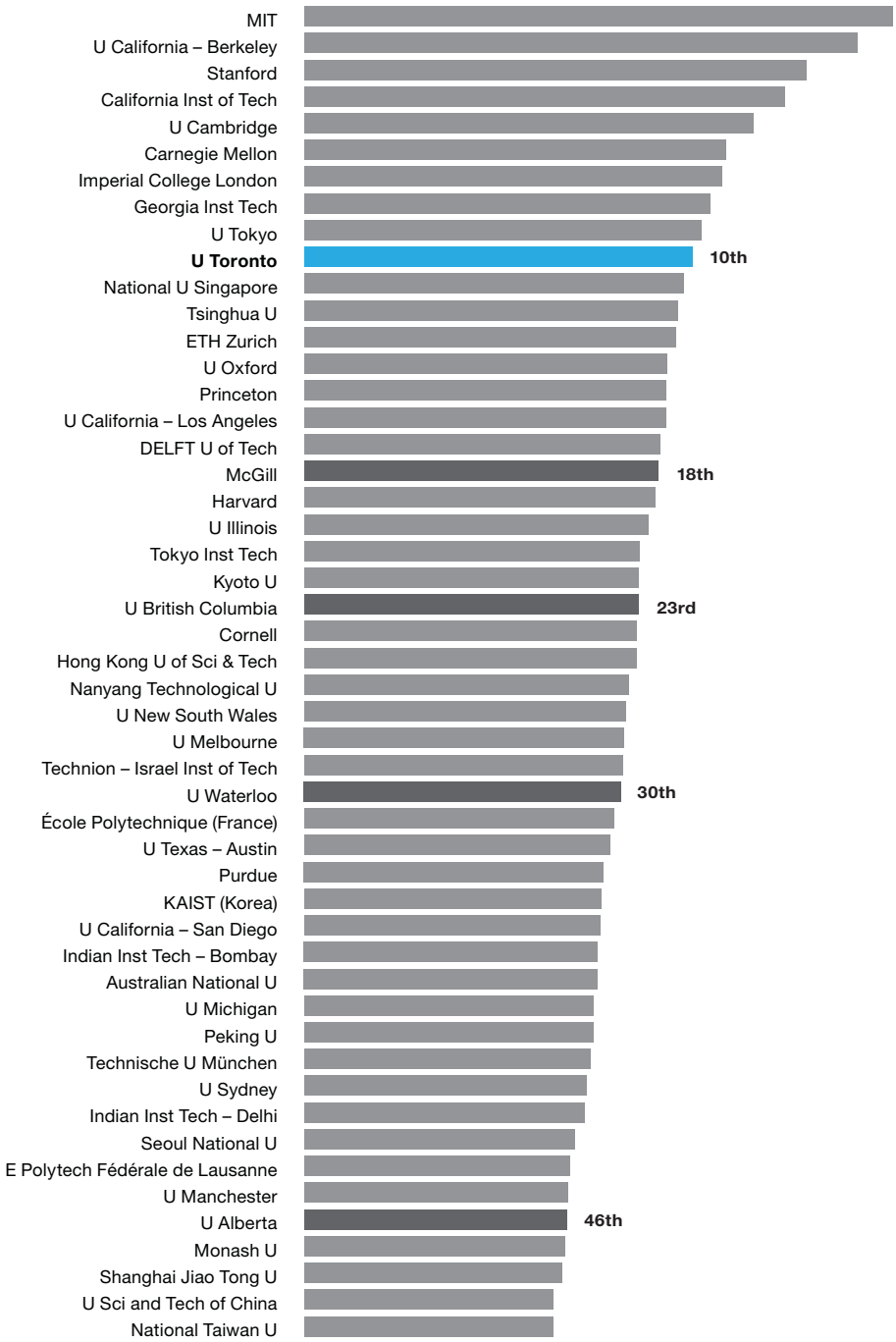
In 2008, U of T Engineering ranked 10th in the world – up from 11th place in 2007 – 7th in North America, and first in Canada according to the Times Higher Education-QS (THE) World University Rankings for Engineering and Information Technology. Based on data from THE, U.S. News & World Report ranked U of T Engineering 10th in the world in their World's Best Colleges and Universities ranking in 2009. On both metrics, our closest Canadian competitor, McGill University, ranked 18th.

Similarly, the Shanghai Jiao Tong Academic Ranking of World Universities for Engineering/Technology and Computer Sciences ranked U of T Engineering first in Canada and 21st in the world in 2008, up from 23rd in 2007. And, the Faculty was first in Canada and 17th in the world in the Higher Education Evaluation & Accreditation Council of Taiwan (HEEACT) Performance Ranking of Engineering Papers for World Universities in 2008.

Rankings provide insights into disciplinary trends and comparative quantification. They are also useful in recruiting top scholars and students. But, with varying methodologies and data sets, they do not tell the whole story.

Bibliometric data highlight the Faculty's excellence in research. Our Faculty ranks 6th in the number of publications and 9th in the number citations among all public and private universities in North America– and first on both counts in Canada.

## Figure 1.1a
## Times Higher Education-Q.S. World University Rankings and U.S. News & World Report World's Best Colleges and Universities, Top 50 Universities for Engineering and Information Technology 2008–2009



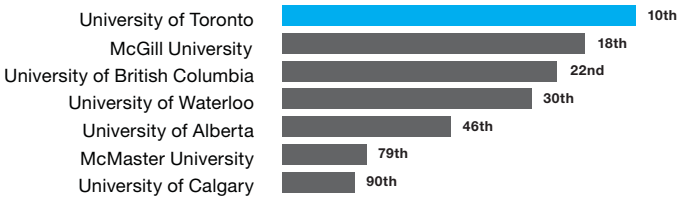

The Faculty continues to be a global leader in the prestigious Times Higher Education-Q.S. (November 2008) and U.S. News & World Report (June 2009) rankings in the Engineering and Information Technology category. Up from 11th in 2007, the Faculty ranked 10th overall in the world in 2008. Remaining first among Canadian universities, U of T Engineering ranked 7th in North America.

The scoring for both the Times Higher Education-Q.S. and U.S. News & World Report rankings is based on four main indicators:

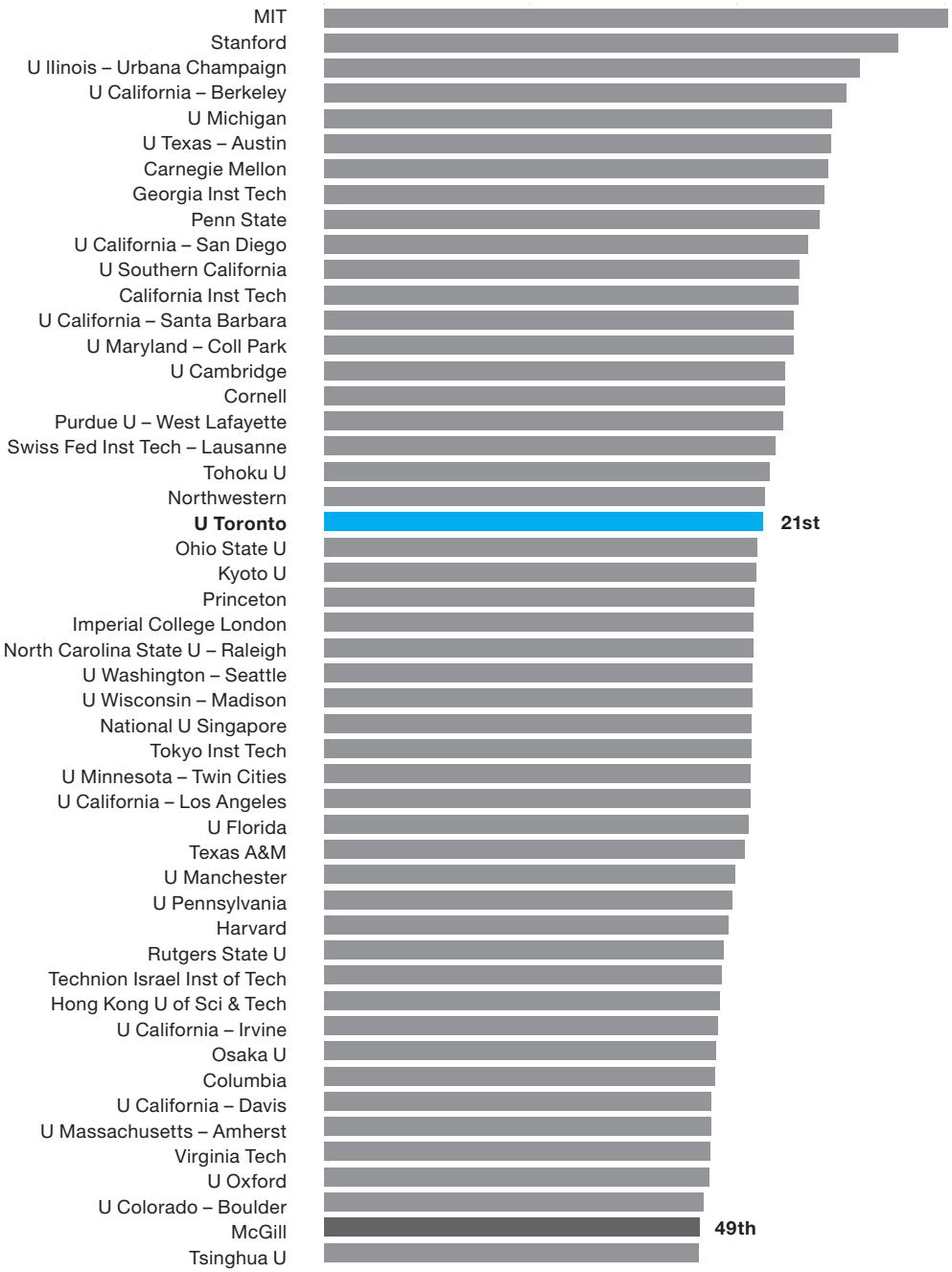
- Academic peer review
- Research performance (citations)
- Student-to-faculty ratio
- Survey of employers

The survey also takes into account the proportion of international faculty and international students. Final scores are compiled by multiplying each indicator by its weighting factor, rounding, then scaling – resulting in a final score out of 100. For the subject rankings, only academic peer review is considered.

## Figure 1.1b
## Canadian G13 in Top 100 from Times Higher Education-Q.S. and U.S. News & World Report for Engineering and Information Technology



## Figure 1.2a
## Shanghai Jiao Tong Academic Ranking of World Universities
## Top 50 Universities for Engineering/Technology and Computer Sciences
## 2008




## Figure 1.2b
## Canadian G13 in Top 100 from Shanghai Jiao Tong Academic Ranking for Engineering/Technology and Computer Sciences


The Academic Ranking of World Universities (ARWU) performed by Shanghai Jiao Tong University is a highly regarded ranking of research universities around the world based on internationally comparable third-party data.

The Engineering/Technology and Computer Sciences ranking is based on the following four indicators, each with a 25% weight:

- Highly cited research (HiCi)
- Published articles in the field (PUB)
- Percentage of articles published in the top 20% of journals in the field (TOP)
- Engineering research expenditure (FUND)

The highest scoring institution is assigned a total score of 100, and other institutions are calculated as a percentage of the top total score. The scores are then placed in descending order.

In 2008, U of T Engineering ranked 21st in the world, up from 23rd in 2007.

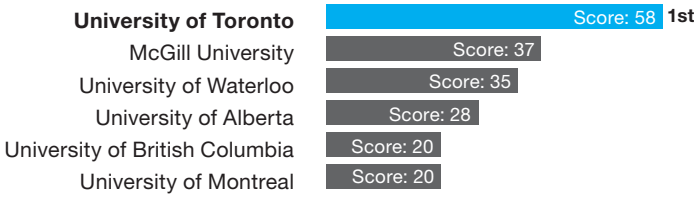
The research expenditure (FUND) in Canadian universities is accounted and reported differently than in their U.S. counterparts, which accounts for lower scores. The detailed analysis of scoring for each of the four indicators is shown on the next page, where U of T Engineering scores 1st in Canada and 14th and 16th in the world in HiCi and PUB, respectively.

Figure 1.2c

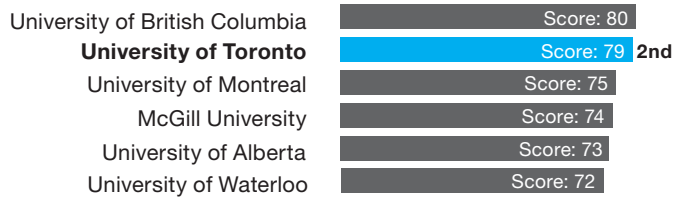
## Scoring Analysis of Canadian G13 in Top 100 from Shanghai Jiao Tong Academic Ranking for Engineering/ Technology and Computer Sciences

Below is a detailed analysis of the scoring for each of the four indicators used to determine the Shanghai Jiao Tong Academic Ranking for Engineering/Technology and Computer Sciences. Maximum score is 100. Only Canadian peer institutions in the top 100 are included.

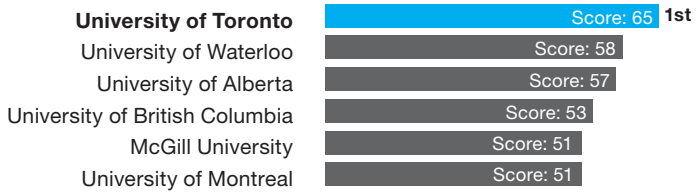
### Scoring on Highly Cited Research (HiCi) Indicator




### Scoring on Articles in Top Journals (TOP) Indicator




### Scoring on Published Articles (PUB) Indicator




### Scoring on Research Expenditure (FUND) Indicator

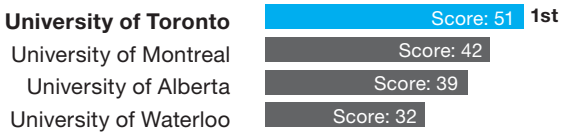
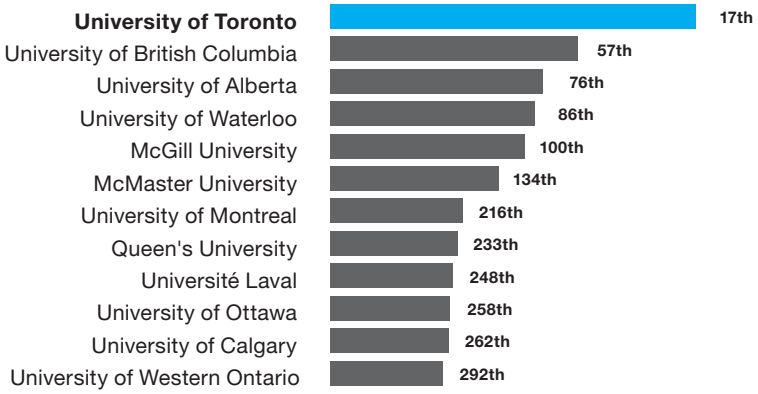



Figure 1.3

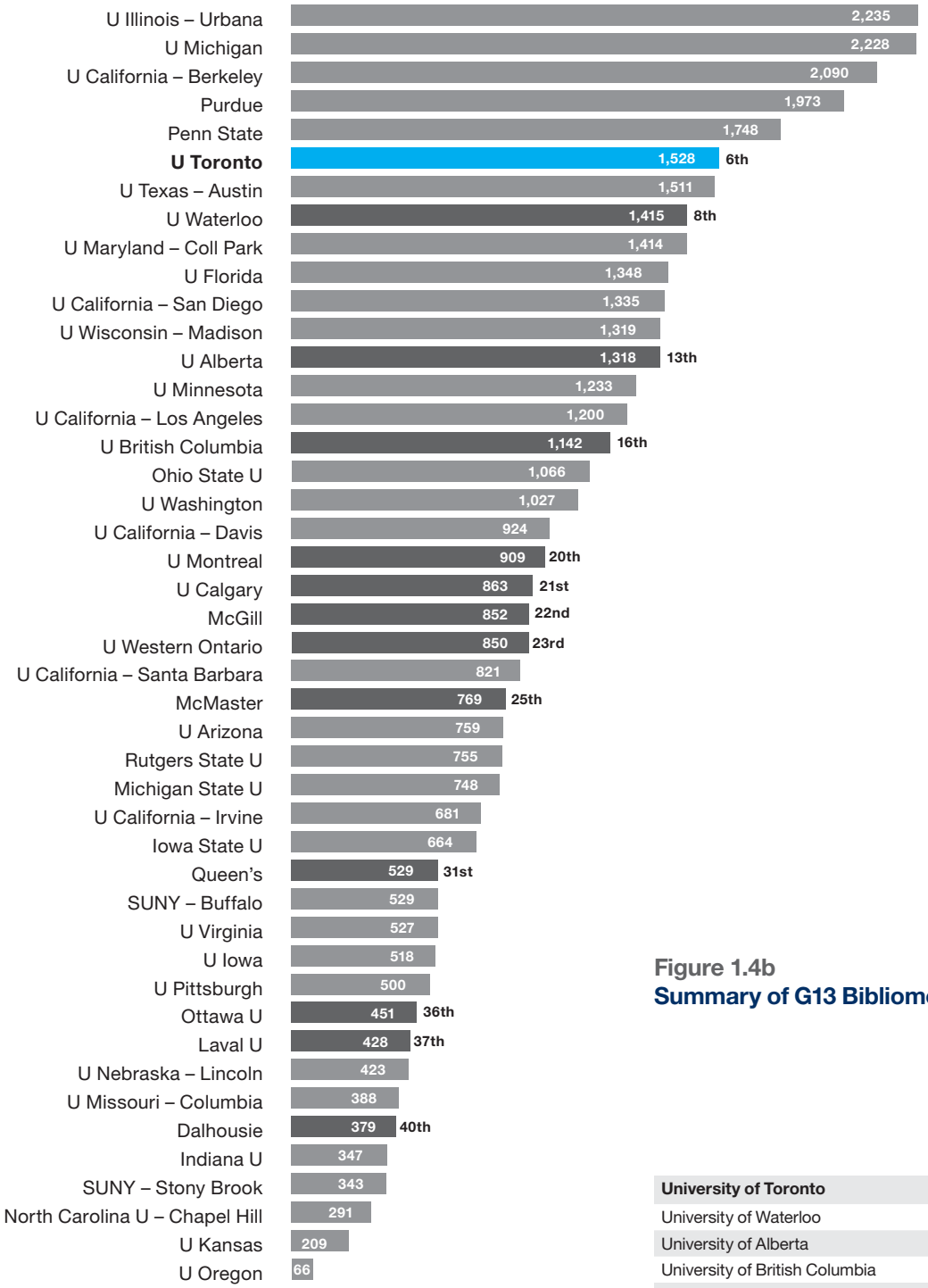
## Higher Education Evaluation & Accreditation Council of Taiwan (HEEACT) Performance Ranking of Engineering Papers for World Universities 2008




The HEEACT bases its rankings on four criteria: the number of articles in the last 11 years, the number of citations in the last 11 years, the number of articles in the current year, and the number of citations in the last 2 years. The four basic criteria are further expanded to include indicators such as the number of articles published in high-impact journals.

U of T Engineering's 17th place standing in the world and first in Canada is an indicator of tremendous research productivity, impact and overall excellence.

## Figure 1.4a
## Number of Engineering Publications Indexed by Thomson Reuters Association of American Universities (AAU) Public and Canadian Peer Institutions 2003–2007



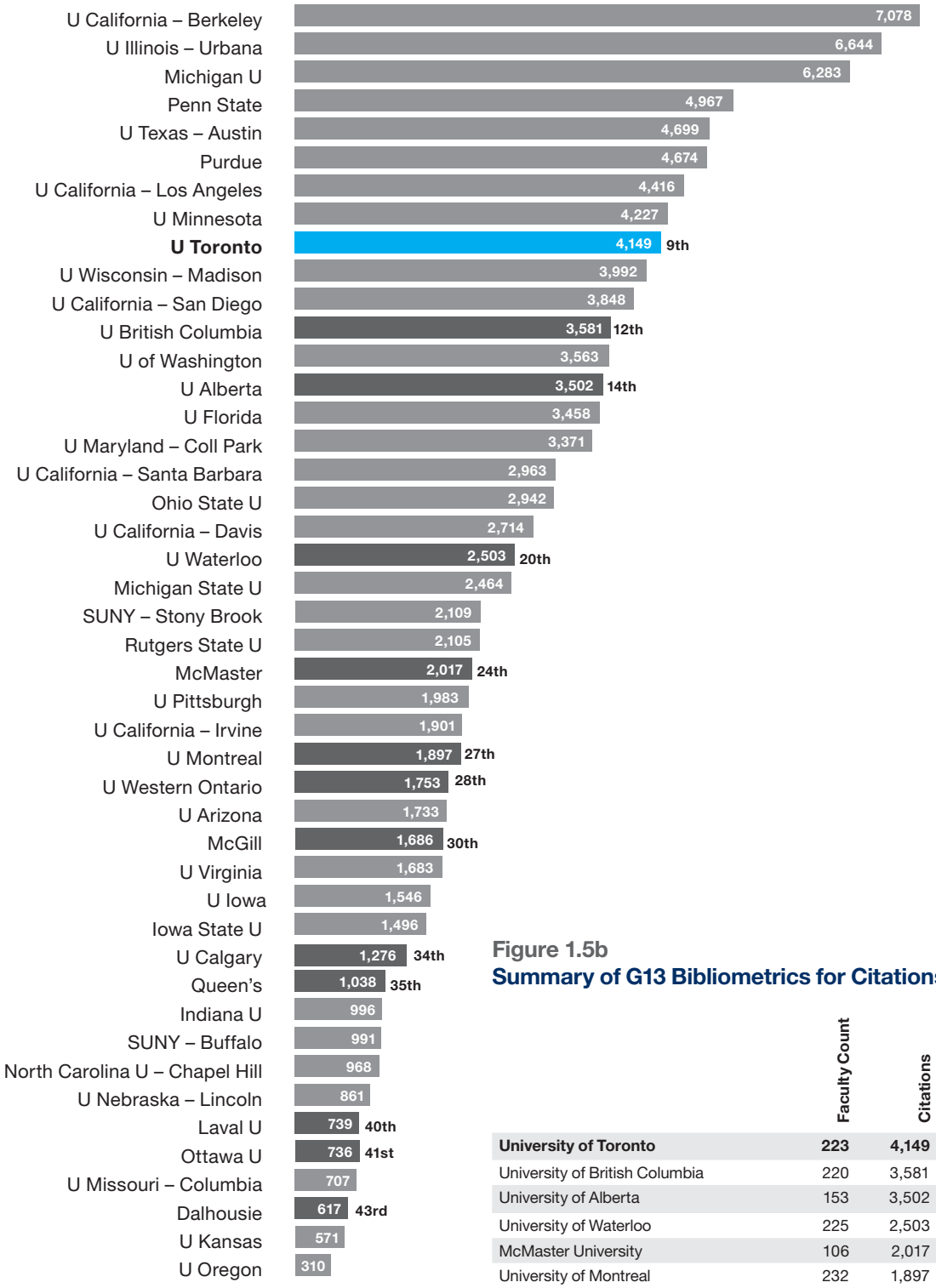

Counts of publications and citations are important measures of research output, productivity and intensity relative to our Canadian and American peer universities.

When compared to our Canadian peer universities, U of T Engineering ranks first in the country for both engineering publications and engineering citations.

## Figure 1.4b
## Summary of G13 Bibliometrics for Publications

| | Faculty Count | Publications | Publications per Faculty | Rank on Pub per Faculty |
|---|---|---|---|---|
| **University of Toronto** | **223** | **1,528** | **6.9** | **4** |
| University of Waterloo | 225 | 1,415 | 6.3 | 5 |
| University of Alberta | 153 | 1,318 | 8.6 | 2 |
| University of British Columbia | 220 | 1,142 | 5.2 | 10 |
| University of Montreal | 232 | 909 | 3.9 | 12 |
| University of Calgary | 149 | 863 | 5.8 | 6 |
| McGill University | 149 | 852 | 5.7 | 7 |
| University of Western Ontario | 88 | 850 | 9.7 | 1 |
| McMaster University | 106 | 769 | 7.3 | 3 |
| Queen's University | 97 | 529 | 5.5 | 8 |
| Ottawa University | 85 | 451 | 5.3 | 9 |
| Université Laval | 148 | 428 | 2.9 | 13 |
| Dalhousie University | 96 | 379 | 3.9 | 11 |

## Figure 1.5a
## Number of Engineering Citations Indexed by Thomson Reuters Association of American Universities (AAU) Public and Canadian Peer Institutions 2003–2007




## Figure 1.5b
## Summary of G13 Bibliometrics for Citations

| | Faculty Count | Citations | Citations per Faculty | Rank on Cites per Faculty | Citations per Publication | Rank on Cites per Pub |
|---|---|---|---|---|---|---|
| **University of Toronto** | **223** | **4,149** | **18.6** | **4** | **2.7** | **2** |
| University of British Columbia | 220 | 3,581 | 16.3 | 5 | 3.1 | 1 |
| University of Alberta | 153 | 3,502 | 22.9 | 1 | 2.7 | 3 |
| University of Waterloo | 225 | 2,503 | 11.1 | 7 | 1.8 | 9 |
| McMaster University | 106 | 2,017 | 19.0 | 3 | 2.6 | 4 |
| University of Montreal | 232 | 1,897 | 8.2 | 11 | 2.1 | 5 |
| University of Western Ontario | 88 | 1,753 | 19.9 | 2 | 2.1 | 6 |
| McGill University | 149 | 1,686 | 11.3 | 6 | 2.0 | 7 |
| University of Calgary | 149 | 1,276 | 8.6 | 10 | 1.5 | 13 |
| Queen's University | 97 | 1,038 | 10.7 | 8 | 2.0 | 8 |
| Université Laval | 148 | 739 | 5.0 | 13 | 1.7 | 10 |
| Ottawa University | 85 | 736 | 8.7 | 9 | 1.6 | 11 |
| Dalhousie University | 96 | 617 | 6.4 | 12 | 1.6 | 12 |

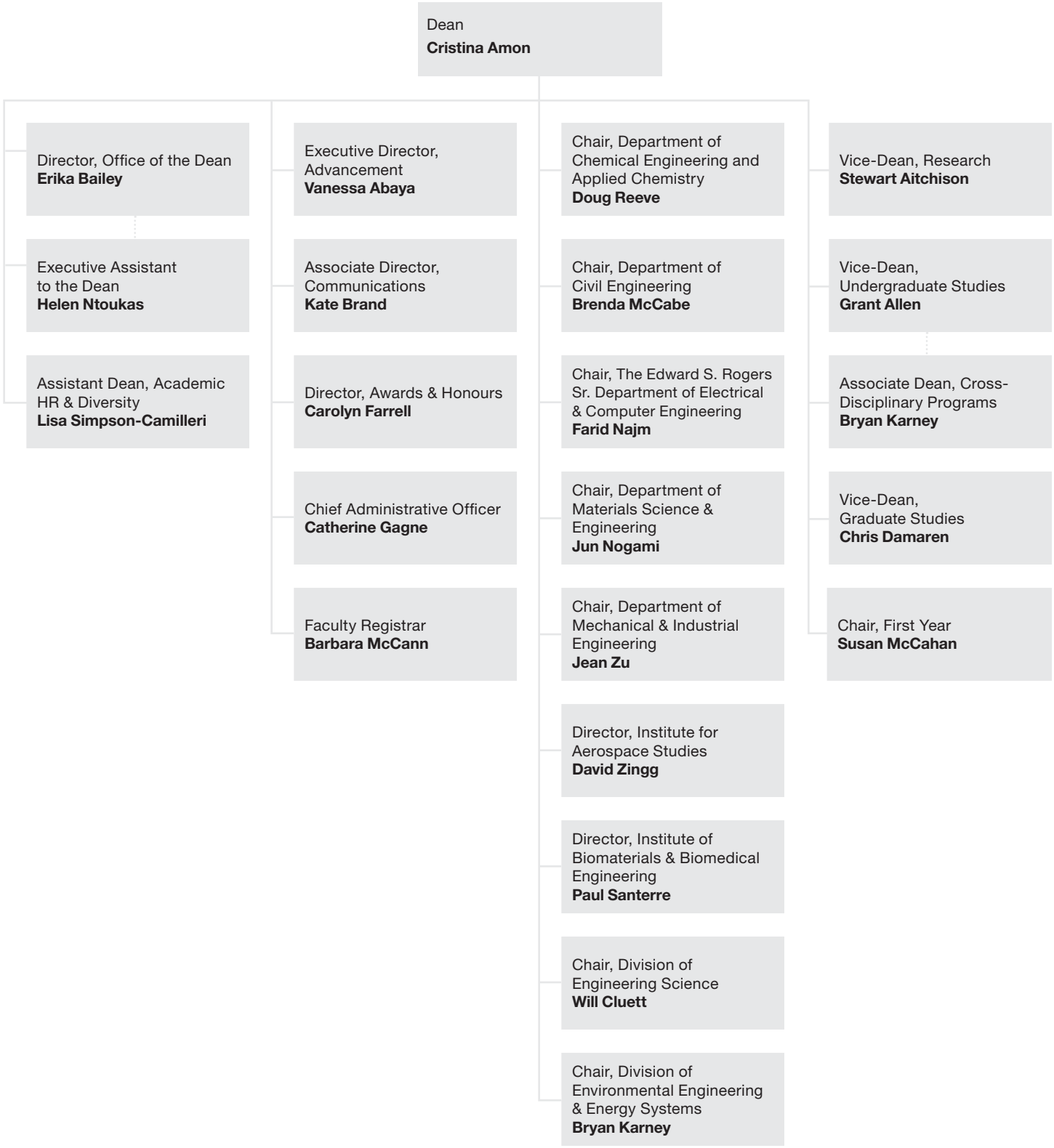
# 2. Faculty

Over the past 10 years the Faculty of Applied Science and Engineering has grown and evolved tremendously. In 1999, the Faculty comprised 182 academic staff – today, the Faculty is home to 230. In the last two years alone, 25 new scholars have joined our community. To learn more about faculty appointments, please visit:
www.enews.engineering.utoronto.ca/sept3/facultyappointments.html

The Faculty's leadership team also continues to evolve. In 2008–2009, three new Chairs were appointed, the Chair of First Year was re-appointed to a second three-year term, and the positions of Assistant Dean, Academic HR & Diversity, and Associate Dean, Cross-Disciplinary Programs Office were created.

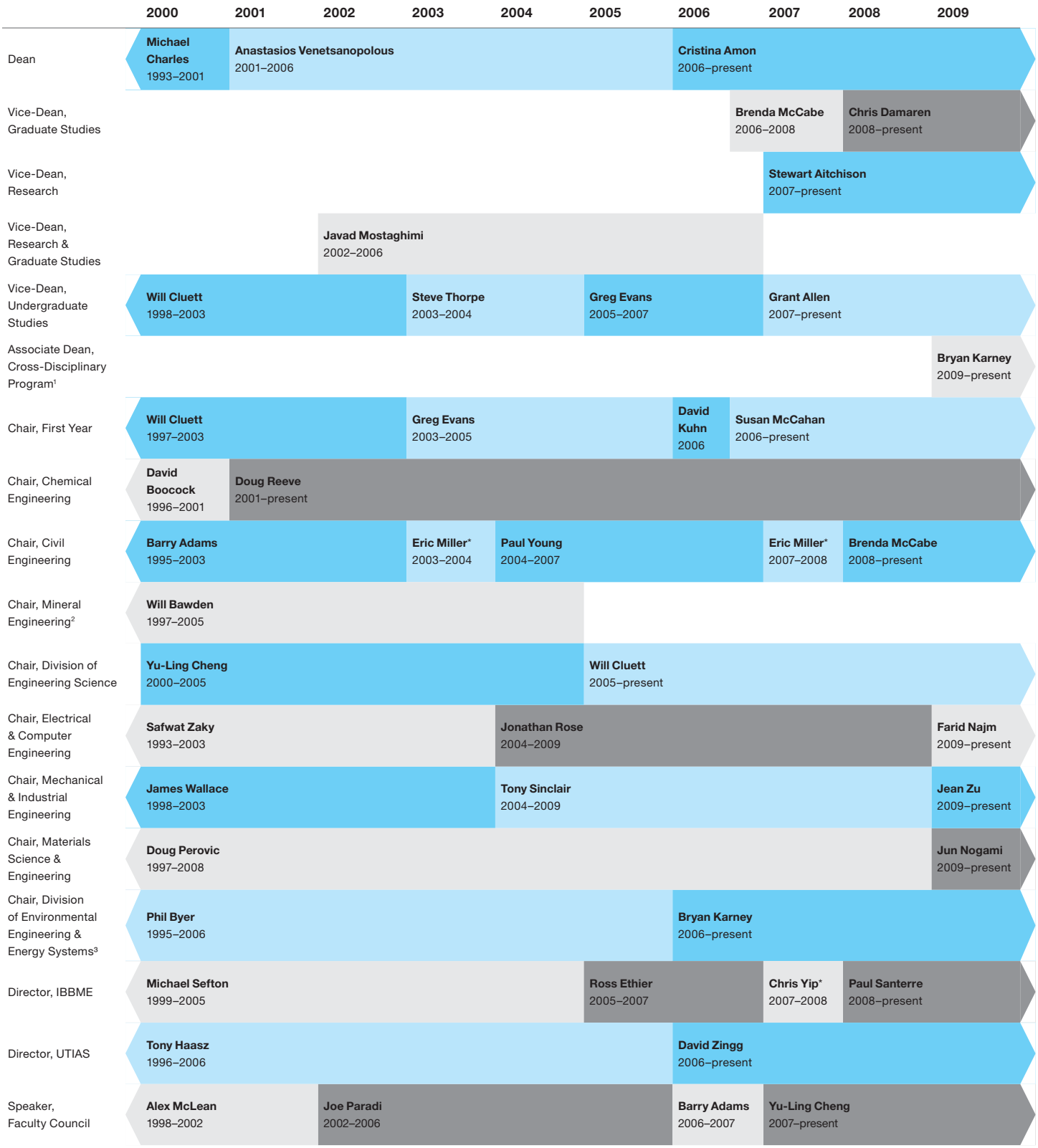
Our Faculty is the strongest in Canada and among the best in the world. Successes in international awards and honours, in competitions for research funding, and in technology transfer are highlighted in the coming chapters.

## Figure 2.1
## Faculty Organizational Chart 2008–2009



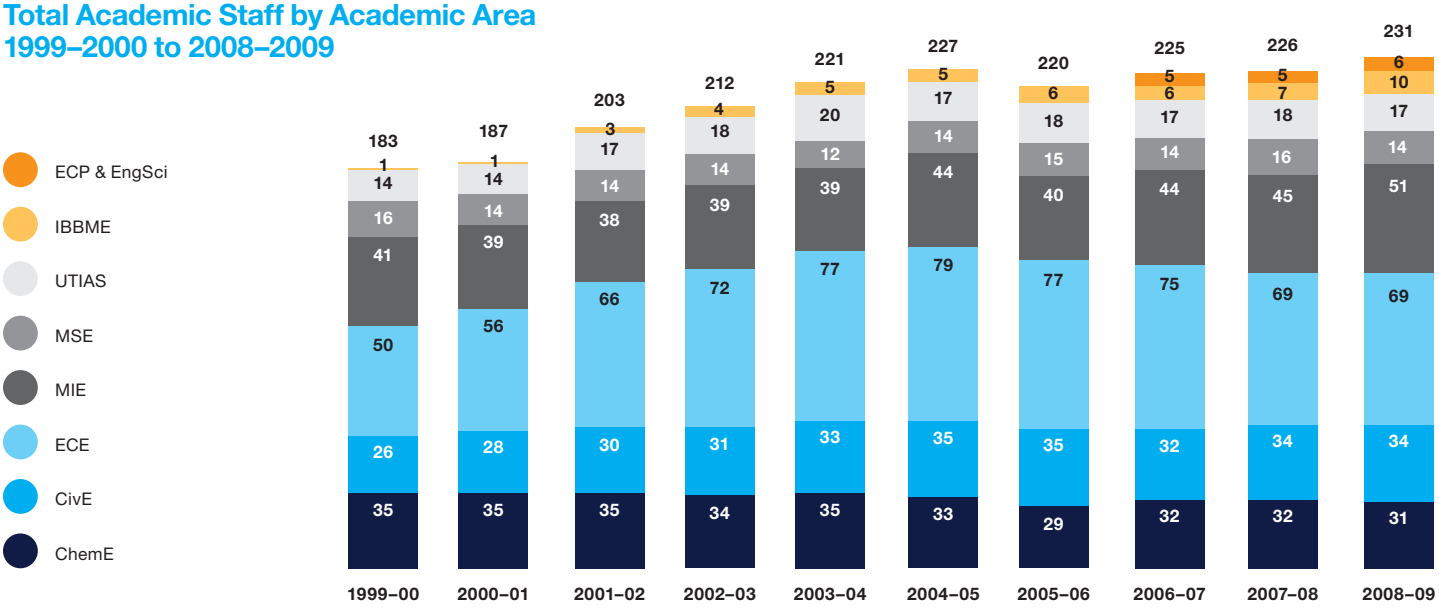

**Note:** In 2008–2009 new Chairs were appointed in ECE, MSE and MIE, the Director of IBBME was appointed in September 2008, and the Chair, First Year was reappointed to a second three-year term. Two positions were redefined in the decanal portfolio in 2008–2009, including the Associate Dean, Cross-Disciplinary Programs, and the Assistant Dean, Academic HR & Diversity. In the past three years, two administrative positions were added, including the Associate Director, Communications and Director, Awards & Honours. In 2009, we partnered with the U of T School of Continuing Studies to deliver our Professional Development Centre (PDC) courses.

## Figure 2.2
## Academic Administrative Faculty Roles 2000–2009




**Note**: (1) Associate Dean, Cross-Disciplinary Programs is a position created in 2009. (2) Merged with Civil Engineering in 2005. (3) Formerly the Division of Environmental Engineering, 1995 to 2005. (*) Indicates Interim Position.

## Figure 2.3a
## Total Academic Staff by Academic Area
## 1999–2000 to 2008–2009

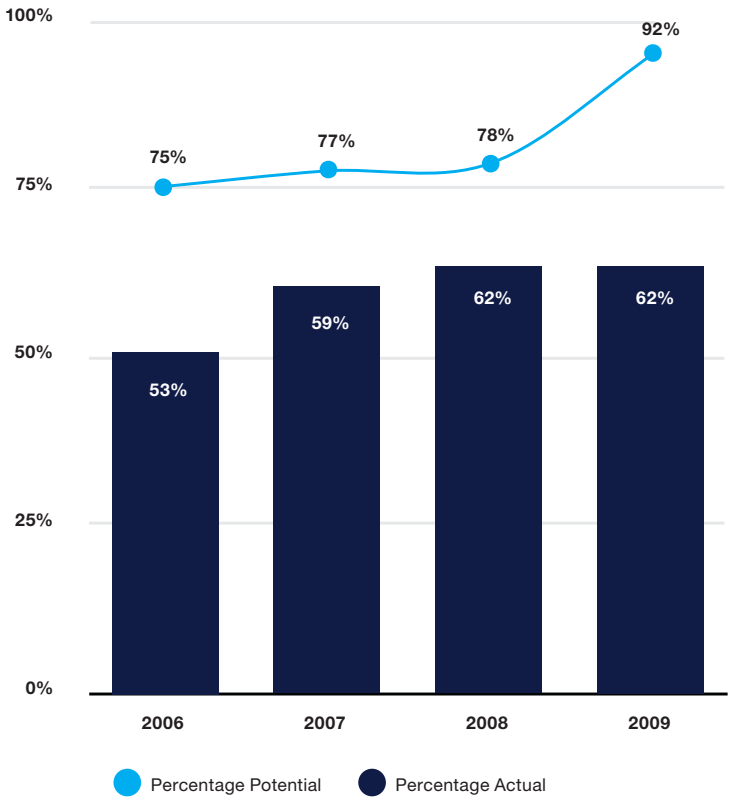



## Figure 2.3b
## Total Academic Staff by Academic Area and Position
## 1999–2000 to 2008–2009

| | | 1999–00 | 2000–01 | 2001–02 | 2002–03 | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **ChemE** | Assistant Prof | 5 | 5 | 4 | 2 | 1 | 1 | 2 | 4 | 5 | 5 |
| | Associate Prof | 7 | 7 | 5 | 5 | 6 | 6 | 2 | 3 | 3 | 3 |
| | Professors | 19 | 19 | 22 | 23 | 24 | 22 | 22 | 22 | 20 | 17 |
| | Lecturers | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 6 |
| **CivE** | Assistant Prof | 5 | 6 | 9 | 9 | 9 | 8 | 7 | 11 | 8 | 6 |
| | Associate Prof | 6 | 7 | 6 | 5 | 7 | 9 | 9 | 6 | 10 | 12 |
| | Professors | 15 | 15 | 15 | 17 | 17 | 18 | 19 | 15 | 15 | 15 |
| | Lecturers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| **ECE** | Assistant Prof | 9 | 15 | 23 | 27 | 30 | 35 | 28 | 25 | 18 | 10 |
| | Associate Prof | 11 | 10 | 5 | 4 | 9 | 9 | 14 | 15 | 22 | 25 |
| | Professors | 27 | 28 | 35 | 37 | 35 | 32 | 30 | 30 | 25 | 30 |
| | Lecturers | 3 | 3 | 3 | 4 | 3 | 3 | 5 | 5 | 4 | 4 |
| **MIE** | Assistant Prof | 7 | 7 | 5 | 5 | 6 | 10 | 10 | 13 | 14 | 13 |
| | Associate Prof | 9 | 8 | 6 | 7 | 7 | 7 | 5 | 6 | 7 | 8 |
| | Professors | 25 | 24 | 27 | 27 | 26 | 26 | 24 | 24 | 23 | 26 |
| | Lecturers | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 3 |
| **MSE** | Assistant Prof | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 |
| | Associate Prof | 5 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 2 |
| | Professors | 11 | 11 | 11 | 11 | 9 | 10 | 10 | 9 | 10 | 10 |
| | Lecturers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **UTIAS** | Assistant Prof | 1 | 1 | 2 | 2 | 5 | 4 | 4 | 4 | 4 | 4 |
| | Associate Prof | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 5 |
| | Professors | 12 | 12 | 12 | 13 | 12 | 10 | 10 | 10 | 9 | 6 |
| | Lecturers | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| **IBBME** | Assistant Prof | 1 | 1 | 3 | 4 | 5 | 4 | 3 | 3 | 3 | 6 |
| | Associate Prof | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 |
| | Professors | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| | Lecturers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ECP & EngSci** | Lecturers | - | - | - | - | - | - | - | 5 | 5 | 6 |
| **Total** | | 183 | 187 | 203 | 212 | 221 | 227 | 220 | 225 | 226 | 231 |

**Note:** Number of lecturers from ECP and EngSci is unavailable prior to 2006–2007. Please see Appendix for further analysis of academic staff.

## Figure 2.4
## Licensure of Faculty by Professional Engineers Ontario 2005–2009




This past year Professional Engineers of Ontario (PEO) introduced a Specific Scope License as an alternative to the PEng for faculty without an undergraduate degree in Engineering, but who are active in research and teaching Engineering Science and Engineering Design courses. We have worked with PEO to facilitate applications by our faculty for both the PEng and Specific Scope Licenses with great success. In Spring 2009, 54 faculty members wrote the Professional Practice Examination which will allow them to qualify for either license. This allows us to have more than 92% of our faculty licensed in the near future.

**Note:** Percentage Potential is comprised of all licensed faculty, plus those who have applied for a license (PEng or Specific Scope).

# 3. Awards and Honours

The Faculty received a record number of major awards and honours in 2008. In fact, the U of T Engineering Faculty is disproportionately recognized for its excellence. We account for 5.1% of all national Engineering faculty and received 31% of all major international and national awards.

The success of our awards program has been enhanced by the newly created Faculty Committee on Nominations for Honours and Awards chaired by Michael Charles, Professor and Dean Emeritus and supported by a full-time staff position. The Committee's dedicated efforts have raised the Faculty's profile among Canada's top Engineering organizations, such as the Engineering Institute of Canada, the Canadian Academy of Engineering, and Professional Engineers Ontario. Their work continues to produce excellent results: from January to July 2009 our scholars have already received 21 major awards.

The University of Toronto and the Faculty of Applied Science and Engineering also recognize the outstanding contributions of staff, faculty, and alumni. Awards and honours are presented in a range of categories, including: outstanding contributions by staff; exceptional early performance and distinction in research; excellence in teaching early in a faculty members' career; and overall excellence in teaching.

## Summary of Selected Major Awards
## September 2007 to April 2009

Prestigious awards and honours are an important measure of scholarly excellence in research, teaching, and service to the profession. Receiving such honours from both national and international bodies is an indication of excellence.

### Major International Awards and Recipients

**ASME Heat Transfer Memorial Award**
Cristina Amon, MIE

**Campus Representative Award: American Society for Engineering Education**
Susan McCahan, MIE

**Computer Award: Institute of Electrical and Electronics Engineers**
K.C. Smith, ECE

**Excellence in Clinical Engineering Leadership Award: American College of Clinical Engineering**
Tony Easty, IBBME

**Fellow: American Association for the Advancement of Science**
Grant Allen, ChemE; Brendan Frey, ECE; M.J. Phillips, ChemE; Chris Yip, ChemE; Peter Zandstra, IBBME; Jean Zu, MIE

**Fellow: American Institute for Medical and Biological Engineering**
Paul Santerre, IBBME; Peter Zandstra, IBBME

**Fellow: American Institute of Aeronautics and Astronautics**
Peter Hughes, UTIAS

**Fellow: American Society of Mechanical Engineers**
Ross Ethier, MIE; Masahiro Kawaji, ChemE; Shaker Meguid, MIE; Jean Zu, MIE

**Fellow: Association for Computing Machinery**
Jonathan Rose, ECE

**Fellow: Institute of Electrical and Electronics Engineers**
Francis Dawson, ECE; Brendan Frey, ECE; Jorg Liebeherr, ECE; Jonathan Rose, ECE

**Fellow: International Union of Societies for Biomaterials Science and Engineering**
Molly Shoichet, ChemE

**Fellow: University of Tokyo School of Engineering**
Javad Mostaghimi, MIE

**Foreign Member: Royal Academy of Spain**
Cristina Amon, MIE

**Founders Award: Society for Biomaterials**
Michael Sefton, IBBME

**IBM Faculty Award: IBM**
Andreas Moshovos, ECE

**International Hall of Fame: The Paper Industry**
Doug Reeve, ChemE

**KAUST Global Research Partnership Award: King Abdullah University of Science and Technology**
Ted Sargent, ECE

**Kiyo Tomiyasu Award: Institute of Electrical and Electronics Engineers**
George Eleftheriades, ECE

**Senior Prize: International Photoacoustic and Photothermal Association**
Andreas Mandelis, MIE

**Sloan Research Fellowship: Alfred P. Sloan Foundation**
Aaron Wheeler, IBBME

**Top 35 Innovators Under 35: MIT Technology Review**
Milica Radisic, ChemE

**Women Engineer Inaugural Award: Electronics and Photonics Packaging Division**
Cristina Amon, MIE

**Yeram S. Touloukian Award: American Society of Mechanical Engineers**
Andreas Mandelis, MIE

**Young Investigator Award: NARSAD**
Julie Audet, IBBME

## Major National Awards and Recipients

**Alouette Award: Canadian Space Agency**
Robert Zee, UTIAS

**Award for Innovation: Canadian Manufacturers and Exporters**
James Smith, ChemE

**Canada Medal: Society of Chemical Industry**
Brian Wastle, ChemE 6T7

**Canada's Top 40 Under 40: Caldwell Partners**
Paul Salvini, CivE; Peter Zandstra, IBBME

**Canadian Materials Physics Gold Medal Award: Canadian Institute of Mining, Metallurgy and Petroleum**
Doug Perovic, MSE

**Canadian Metal Chemistry Award: Canadian Institute of Mining, Metallurgy and Petroleum**
Stavros Argyropoulos, MSE

**Engineers Canada Gold Medal**
Morden Yolles, CivE 4T8

**Engineers Canada Medal of Distinction**
Susan McCahan, MIE

**E.W.R. Steacie Fellowship: NSERC**
Brendan Frey, ECE

**Excellence in Innovation in Civil Engineering Award: Canadian Society for Civil Engineering**
Jeffrey Packer, CivE; Constantin Christopoulos, CivE; Carlos de Olivera, CivE

**Fellow: Canadian Academy of Engineering**
Barry Adams, CivE; Cristina Amon, MIE; William Bawden, CivE; Michael Collins, CivE; Levente Diosady, ChemE; Masahiro Kawaji, ChemE; Alex McLean, MSE; Javad Mostaghimi, MIE; Doug Perovic, MSE; Jonathan Rose, ECE; Willem Vanderburg, CivE

**Fellow: Canadian Institute of Food Science and Technology**
Levente Diosady, ChemE

**Fellow: Canadian Society for Mechanical Engineering**
Cristina Amon, MIE; Javad Mostaghimi, MIE; Hani Naguib, MIE; Yu Sun, MIE

**Fellow: Chemical Institute of Canada**
Grant Allen, ChemE; Graeme Norval, ChemE

**Fellow: Engineering Institute of Canada**
Barry Adams, CivE; Cristina Amon, MIE; Michael Charles, ChemE; Michael Collins, CivE; Mark Fox, MIE; Alberto Leon-Garcia, ECE; Jim Wallace, MIE

**Fellow: Royal Society of Canada**
George Eleftheriades, ECE; Molly Shoichet, ChemE; Paul Young, CivE

**Fred Beamish Award: Canadian Society for Chemistry**
Aaron Wheeler, IBBME

**International Award: Society of Chemical Industry**
Larry Seeley, ChemE 7T2

**John S. Bates Memorial Gold Medal: Canadian Pulp and Paper Association**
Donald B. Mutton, ChemE 4T9, PhD 5T3

**John H. Chapman Award of Excellence: Canadian Space Agency**
Peter Hughes, UTIAS

**Jules Stachiewicz Medal: Canadian Society for Mechanical Engineering**
Charles Ward, MIE

**Kalev Pugi Award: Society of Chemical Industry**
Stephen Dunn, ChemE 7T1

**Killam Prize: Canada Council for the Arts**
Michael Sefton, IBBME

**Killam Research Fellowship: Canada Council for the Arts**
Elizabeth Edwards, ChemE; Molly Shoichet, ChemE

**LeSueur Memorial Medal: Society of Chemical Industry**
David Boocock, ChemE

**Medal for Outstanding Achievement in Industrial and Applied Physics: Canadian Association of Physicists**
Andreas Mandelis, MIE

**Order of Canada (Member): Governor General of Canada**
Barry French, UTIAS

**Robert W. Angus Medal: Canadian Society for Mechanical Engineering**
Chul Park, MIE

**Wighton Fellowship: Sandford Fleming Foundation**
Paul Jowlabar, ChemE

## Major Provincial Awards and Recipients

**Engineering Medal for Entrepreneurship: Professional Engineers Ontario**
Howard Goodfellow, ChemE 6T4

**Engineering Medal for Management: Professional Engineers Ontario**
Jan Carr, ECE 6T8; Lloyd McCoomb, CivE 6T8

**Engineering Medal for Research and Development: Professional Engineers Ontario**
Greg Evans, ChemE; Nazir Kherani, ECE; Javad Mostaghimi, MIE; Chul Park, MIE; Milos Popovic, IBBME

**George Warren Fuller Award: Ontario Water Works Association**
Robert Andrews, CivE

**Gold Medal: Professional Engineers Ontario**
Walter Curlook, MMS 5T0, MASc 5T1, PhD 5T3, Hon. Doc. 0T2; Anne Sado, MIE 7T7

**Leadership in Faculty Teaching Award: Province of Ontario**
Yu-Ling Cheng, ChemE

**Young Engineer Medal: Professional Engineers Ontario**
Constantin Christopoulos, CivE; Dwayne Shirley, MSE

## Figure 3.1
## Summary of Major International, National and Provincial Awards and Honours 2000–2009

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| **International** | | | | | | | | | | |
| AAAS Fellowship* | | | | | | 1 | 1 | 2 | 4 | |
| Guggenheim Fellowship* | | | | | 1 | | | 1 | | |
| MIT Top 35 Under 35 | | | | 1 | | 1 | | | 1 | |
| NAE Fellowship* | | | | | | 1 | 1 | | | |
| **National** | | | | | | | | | | |
| 3M Teaching Fellowship* | | | | | | | | 1 | | |
| Alan Blizzard Award | | | | | | | | 1 | | |
| Canada's Top 40 Under 40 | | | | 1 | | | 2 | 2 | 2 | |
| CAE Fellowship | | | | | | 3 | 2 | 1 | 3 | 9 |
| EIC Fellowship | | | | | 1 | | 2 | 2 | 3 | 4 |
| Killam Research Fellowship* | | | | | | | | | 2 | |
| Killam Prize* | | | | 1 | | | | | 1 | |
| Royal Society of Canada Fellowship* | 1 | 1 | | 2 | | 1 | 1 | 1 | 1 | 1 |
| Steacie Fellowship* | | | | 2 | 1 | 1 | | | | 1 |
| Synergy Award for Innovation | | | | | 1 | 1 | | | | 1 |
| **Provincial** | | | | | | | | | | |
| PEO Medals | | | 1 | 1 | 1 | 4 | 2 | 3 | 5 | 5 |
| **Total** | **1** | **1** | **1** | **8** | **5** | **13** | **11** | **14** | **22** | **21** |

**Note:** (*) Denotes U of T Performance Indicator. (1) Data for 2009 are from January to July. Includes faculty and alumni award recipients.

***AAAS Fellowship**
Recognition for meritorious efforts to advance science or its applications from the American Association for the Advancement of Science.

***Guggenheim Fellowship**
Intended for men and women who have demonstrated exceptional capacity for productive scholarship.

**MIT Top 35 Under 35**
Awarded to world's top 35 young innovators under the age of 35 by MIT Technology Review magazine.

***NAE Fellowship**
Election to the National Academy of Engineering is among the highest professional distinctions accorded to an engineer.

***3M Teaching Fellowship**
Canada's highest teaching award in recognition of teaching excellence and educational leadership.

**Alan Blizzard Award**
In recognition of exemplary collaboration in university teaching as it enhances student learning.

**Canada's Top 40 Under 40**
Honours top 40 Canadians who have reached a significant level of success prior to age 40.

**CAE Fellowship**
The Canadian Academy of Engineering elects Fellows for distinguished achievements and career-long service to the engineering profession.

**EIC Fellowship**
Engineering Institute of Canada recognizes exceptional contributions to engineering in Canada and for service to the profession and to society.

***Killam Research Fellowship**
Awarded by the Canada Council for the Arts to an established scholar who has demonstrated outstanding research ability and has published research results in substantial publications in their field. Recipients have the opportunity to devote two years to full-time research as part of this Fellowship.

***Killam Prize**
Awarded by the Canada Council for the Arts to distinguished Canadian scholars doing research in one of five fields of study, including engineering.

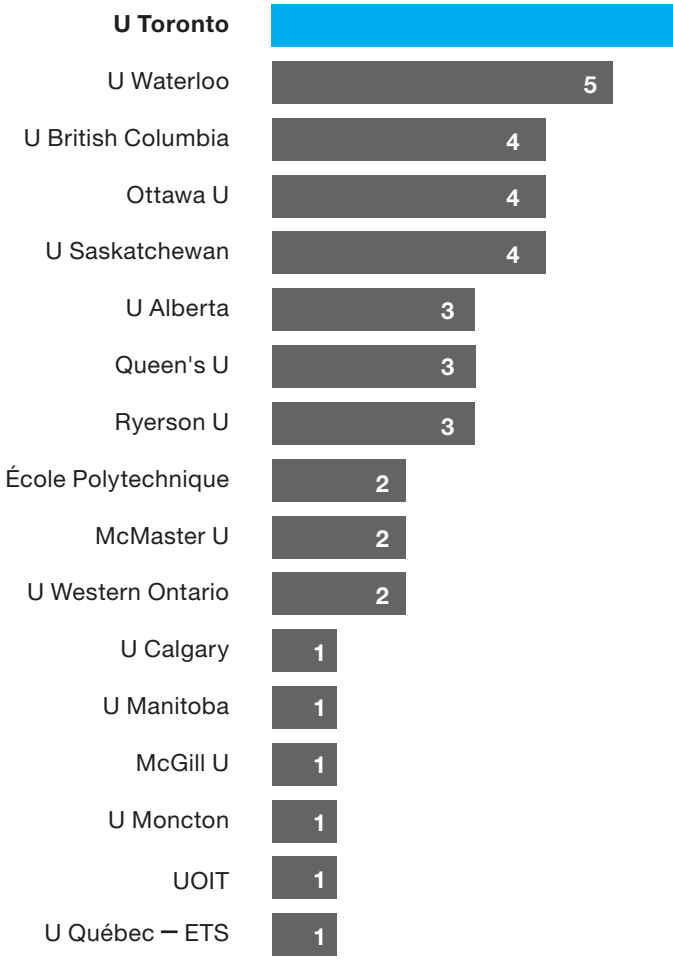
***Royal Society of Canada Fellowship**
Highest Canadian honour a scholar can achieve in the arts, humanities and sciences.

***Steacie Fellowship**
Awarded by NSERC to enhance the career development of outstanding and highly promising scientists and engineers.

**Synergy Award for Innovation**
Recognizes examples of university-industry collaboration that stand as a model of effective partnership.

## Figure 3.2a
## Number of Awards Received by U of T Engineering Compared to Other Canadian Engineering Faculties 2008

U of T Engineering received 5 major international awards and 12 national awards, which is 31% of all major awards received by Engineering Faculties in Canada.




## Figure 3.2b
## Percent of Engineering Faculty and Total Major Awards Received in Canadian Engineering Faculties 2008

| | Percent of Total FTE Engineering Faculty in Canada | Percent of Total Major Awards Received by Engineering Faculties |
|---|---|---|
| **U Toronto** | **5.1%** | **31.0%** |
| U Waterloo | 5.7% | 9.1% |
| U British Columbia | 3.8% | 7.3% |
| Ottawa U | 2.5% | 7.3% |
| U Saskatchewan | 2.0% | 7.3% |
| U Alberta | 4.0% | 5.5% |
| Queen's U | 3.4% | 5.5% |
| Ryerson U | 3.1% | 5.5% |
| École Polytechnique | 7.7% | 3.6% |
| McMaster U | 3.3% | 3.6% |
| U Western Ontario | 2.1% | 3.6% |
| U Calgary | 3.5% | 1.8% |
| U Manitoba | 0.3% | 1.8% |
| McGill U | 2.9% | 1.8% |
| U Moncton | 0.6% | 1.8% |
| UOIT | 0.9% | 1.8% |
| U Québec – ETS | 16.4% | 1.8% |
| U Windsor | 1.6% | 1.8% |

**Note:** The following major awards are included above: International – AAAS Fellowship (Engineering Section), MIT Top 35 Under 35, NAE Fellowship; National – Canada's Top 40 Under 40, CAE Fellowship, EIC Fellowship, Killam Prize (Engineering), Royal Society of Canada Fellowship (Engineering/Physical Sciences), Steacie Fellowship, Synergy Awards for Innovation.

The following Canadian Universities have accredited Engineering programs:

- University of Alberta
- University of British Columbia
- University of Calgary
- Carleton University
- Concordia University
- Dalhousie University
- University of Guelph
- Lakehead University
- Laurentian University
- Université Laval
- University of Manitoba
- McGill University
- McMaster University
- Memorial University of Newfoundland
- Université de Moncton
- Université du Québec à Montréal
- University of New Brunswick
- University of Northern British Columbia
- University of Ontario Institute of Technology
- University of Ottawa
- École Polytechnique
- Université du Québec en Abitibi-Témiscamingue
- Université du Québec à Chicoutimi
- Université du Québec – École de Technologie Supérieure (ETS)
- Université du Québec en Outaouais
- Université du Québec à Rimouski
- Université du Québec à Trois-Rivières
- Queen's University
- University of Regina
- Royal Military College of Canada
- Ryerson University
- University of Saskatchewan
- Université de Sherbrooke
- Simon Fraser University
- University of Toronto
- University of Victoria
- University of Waterloo
- University of Western Ontario
- University of Windsor
- York University

## Summary of University of Toronto Awards Received by Engineering September 2007 to April 2009

**Arbor Award**
Caprice Boisvert, MIE 9T3; Roland Bergman, MSE 5T5; Sydney C. Cooper, CivE 4T5; Dave Fenwick, EngBus 5T3; Joseph Paul Grieco, CivE 7T0; Claire Kennedy, ChemE 8T9; Murray Metcalfe, IndE 7T7; Larry Seeley, ChemE 6T6, MASc 6T8, PhD 7T2; Som Seif, IndE 9T9; Arshia Tabrizi, ECE 9T5; Bill Troost, ChemE 6T7; Paul Walters, MinE 5T6; Bert Wasmund, ChemE PhD 6T6; William C. Winegard, MSE 4T9, MASc 5T0, PhD 5T2, Hon. Doc. Law 7T3

**Breaking the Glass Ceiling Award**
Milica Radisic, ChemE

**Carolyn Tuohy Impact on Public Policy Award**
Doug Reeve, ChemE

**Chancellor's Award**
Barbara McCann, Faculty Registrar

**Faculty Award**
David Zingg, UTIAS

**Joan E. Foley Quality of Student Experience Award**
Greg Evans, ChemE

**McLean Award**
Peter Zandstra, IBBME

**Northrop Frye Award**
Bryan Karney, CivE

**President's Teaching Award**
Yu-Ling Cheng, ChemE

**Stepping Up Award**
Alina Balosin; Helen Bright; Dani Couture; Khuong Doan; Pierina Filippone; Catherine Gagne; Steve Martin; Sergei Metropolitansky; Dan Pettigrew; Austra Ozolins; Nelly Pietrepaolo; Jean Robertson; Sean Suleman; Alex Tichine; Georgette Zintay

**TATP Teaching Excellence Award**
Vinod Muthusamy, ECE

**Vivek Goel Faculty Citizenship Award**
Ron Venter, MIE

---

**Note:**

**Arbor Award**
The University of Toronto Alumni Association recognizes volunteers for outstanding personal service to the University.

**Breaking the Glass Ceiling Award**
Women in Science and Engineering at U of T celebrates outstanding accomplishments of women professors.

**Carolyn Tuohy Impact on Public Policy Award**
The University of Toronto Alumni Association recognizes excellence in teaching, research, and the impact of scholarship on public policy.

**Chancellor's Award**
The University of Toronto Alumni Association presents this award for outstanding contributions by an administrative staff member.

**Faculty Award**
Presented by the University of Toronto Alumni Association for excellence in teaching, research, and professional endeavours.

**Joan E. Foley Quality of Student Experience Award**
The University of Toronto Alumni Association presents this award to a student, alumni, administrative staff or faculty member who has made significant contribution to improving the quality of academic or extracurricular student life on campus.

**McLean Award**
Prestigious award for early-career researchers at U of T.

**Northrop Frye Award**
Presented by the University of Toronto Alumni Association to a faculty member in recognition of distinguished achievements in linking teaching and research.

**President's Teaching Award**
Recognizes sustained excellence in teaching, research in teaching, and the integration of teaching and research.

**Stepping Up Award**
Recognizes staff who contribute to one of the U of T academic plan's five major goals: enhancing the student experience; interdisciplinary activity; linking academic programs to research experiences; outreach; and equity and diversity.

**TATP Teaching Excellence Award**
The University's Teaching Assistant's Training Program recognizes the impact of excellent teaching assistants each year.

**Vivek Goel Faculty Citizenship Award**
Presented by the University of Toronto Alumni Association for distinction in multiple leadership committees, governance bodies, and external organizations complementary to the University's academic mission.

## Summary of U of T Engineering Awards 2001–2009

### Faculty Teaching Award

The highest teaching tribute awarded by the Faculty.

| | | |
|---|---|---|
| 2009 | Mike Carter | ECE |
| 2008 | Tarek Abdelrahman | ECE |
| 2007 | Raviraj Adve | ECE |
| 2006 | Frank Kschischang | ECE |
| 2005 | Ross Ethier | MIE |
| 2004 | Kim Pressnail | CivE |
| | Z.G. Vranesic | ECE |
| 2003 | David Kuhn | ChemE |
| 2002 | Bryan Karney | CivE |
| 2001 | Tony Sinclair | MIE |

### Early Career Teaching Award

In recognition of excellence in teaching early in a career.

| | | |
|---|---|---|
| 2009 | Craig Simmons | MIE |
| 2008 | Hani Naguib | MIE |
| 2007 | Wei Yu | ECE |
| 2006 | Ali Sheikholeslami | ECE |
| 2005 | Evan Bentz | CivE |
| 2004 | Paul Gauvreau | CivE |
| 2003 | Parham Aarabi | ECE |
| 2002 | R. Ben Mrad | MIE |
| 2001 | Baher Abdulhai | CivE |

### McCharles Prize for Early Career Research

This award was re-introduced in 2008 to recognize exceptional performance and distinction in research early in a career. Originally established in 1907 with a gift from Aeneas McCharles, this award will be presented again in 2010 and then every three years.

| | | |
|---|---|---|
| 2008 | Wei Yu | ECE |

### Agnes Kaneko Award

Presented to a staff member who has made an outstanding contribution to the Faculty over an extended period of time. This award was established in memory of Agnes Kaneko, a Civil Engineering staff member who was known for her excellent work and dedication to the Faculty.

| | | |
|---|---|---|
| 2009 | Renzo Basset | CivE |
| 2008 | Linda Espeut | ECE |
| 2007 | Brenda Fung | MIE |
| 2006 | Peter Leesti | CivE |
| 2005 | Sandra Walker | EngSci |
| 2005 | Yvonne MacNeil | IBBME |
| 2004 | Kelly Chan | ECE |
| 2003 | Bob Manson | ECF |
| 2002 | Ella Lund-Thomsen | ECE |
| 2001 | Teresa Miniaci | MSE |

# 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.

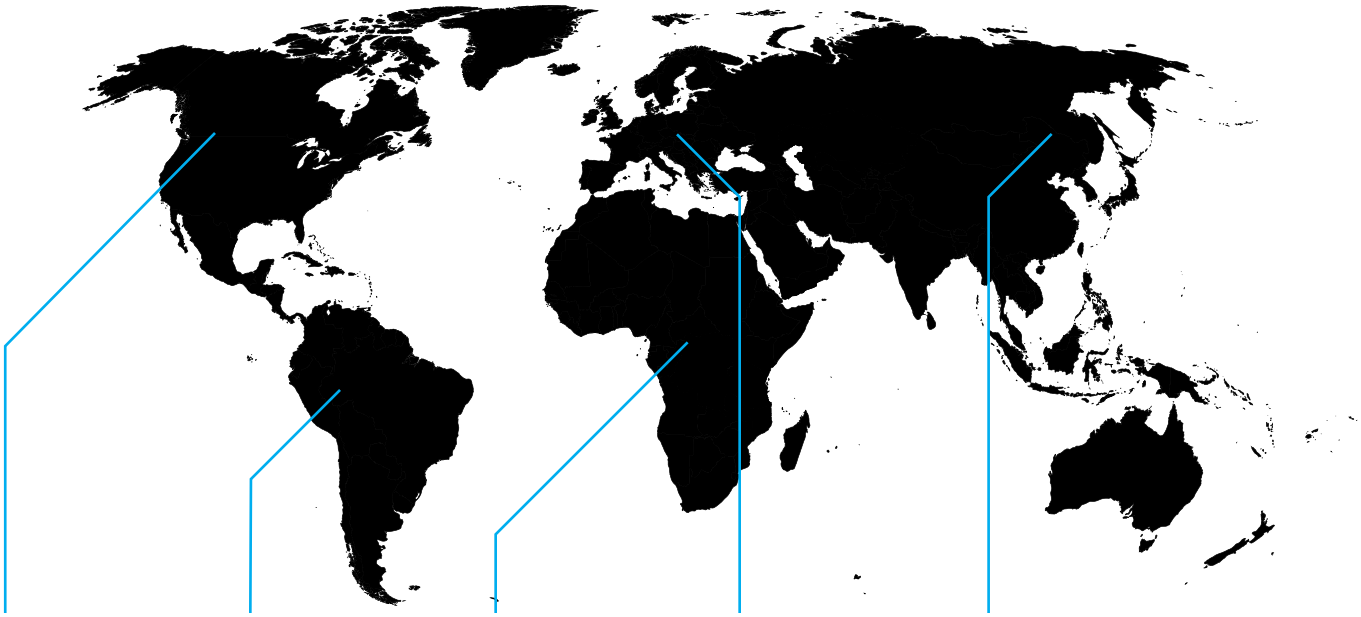
At the same time, the 2008–2009 entering class is our most diverse. Students arrived at the Faculty from all 10 Canadian provinces, 45 countries, and every continent. The First Year international student population in the Faculty increased to 18.9% in 2008 from 14.1% in 2007. Indeed, more than 40% of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

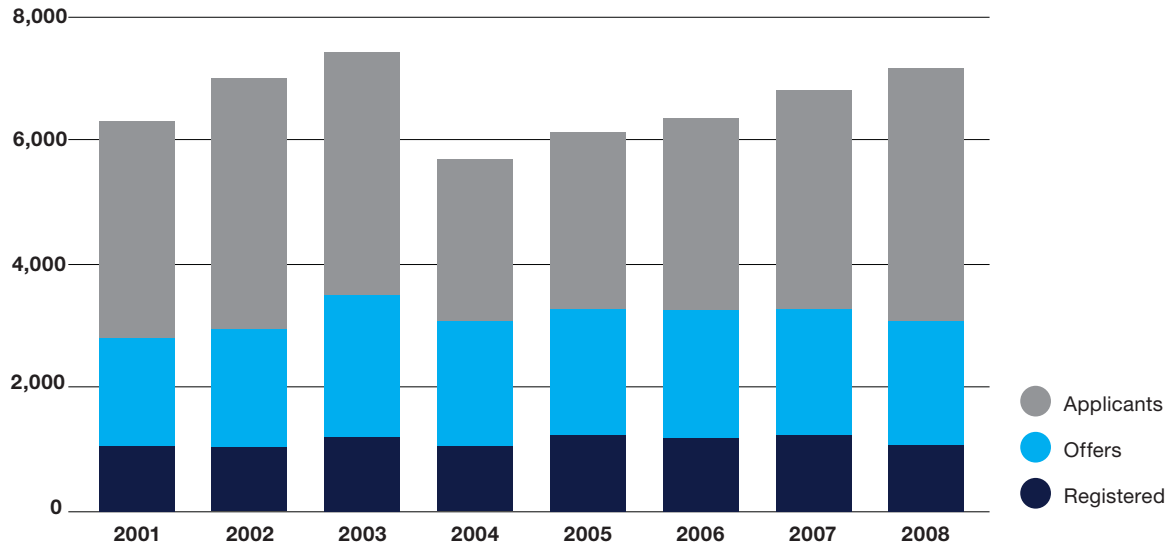
Constantly striving to foster student engagement, the Faculty and the Engineering Society hosted successful Dean's Town Hall assemblies. Initiated by the Dean in 2007–2008, these gatherings provide a forum for faculty and students to discuss goals and plans, to respond to questions and to address concerns.

## 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



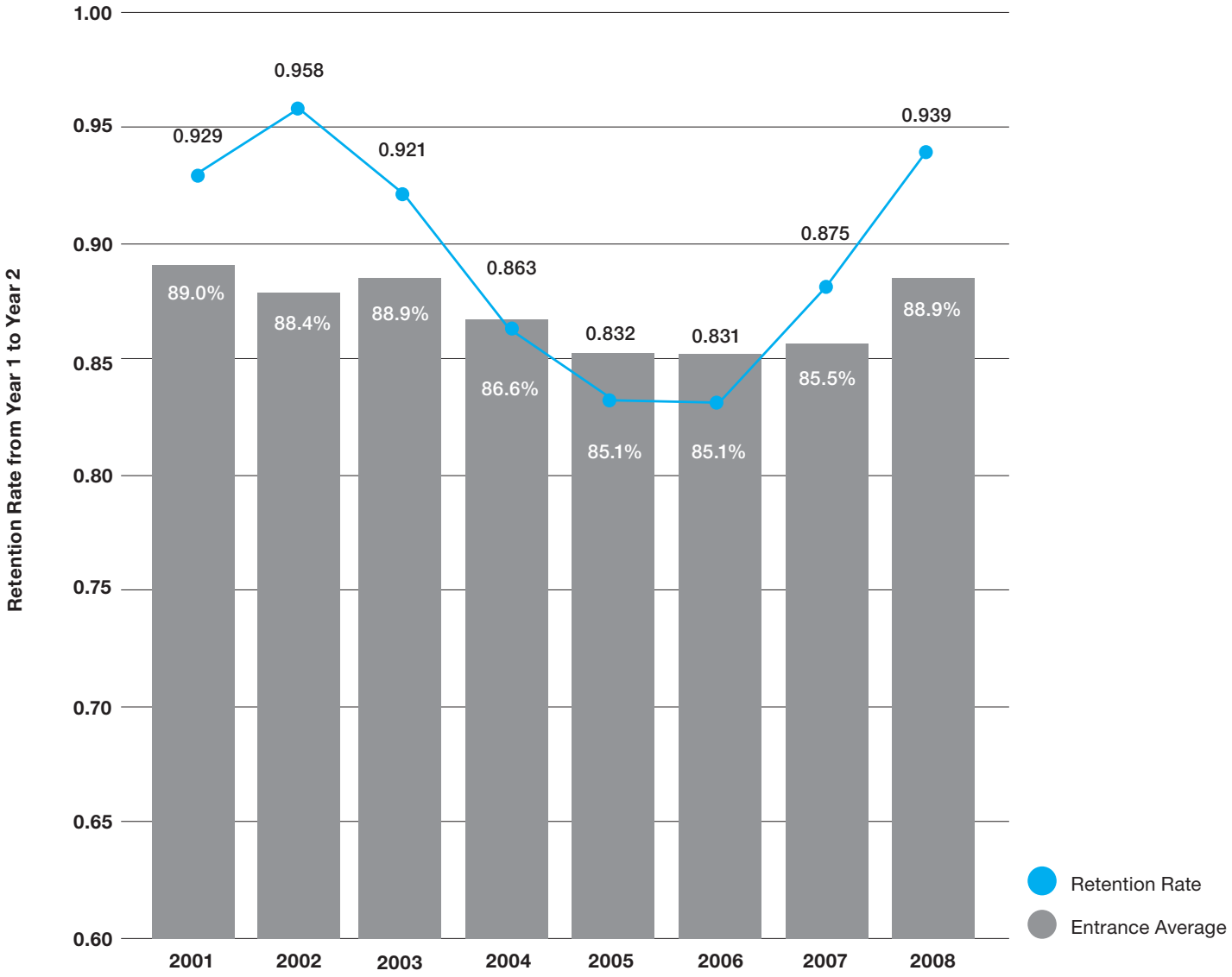

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|
| **Applications** | 6,339 | 7,026 | 7,454 | 5,715 | 6,163 | 6,383 | 6,829 | 7,185 |
| **Offers** | 2,822 | 2,965 | 3,513 | 3,094 | 3,290 | 3,276 | 3,300 | 3,107 |
| **Registered** | 1,051 | 1,022 | 1,200 | 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.

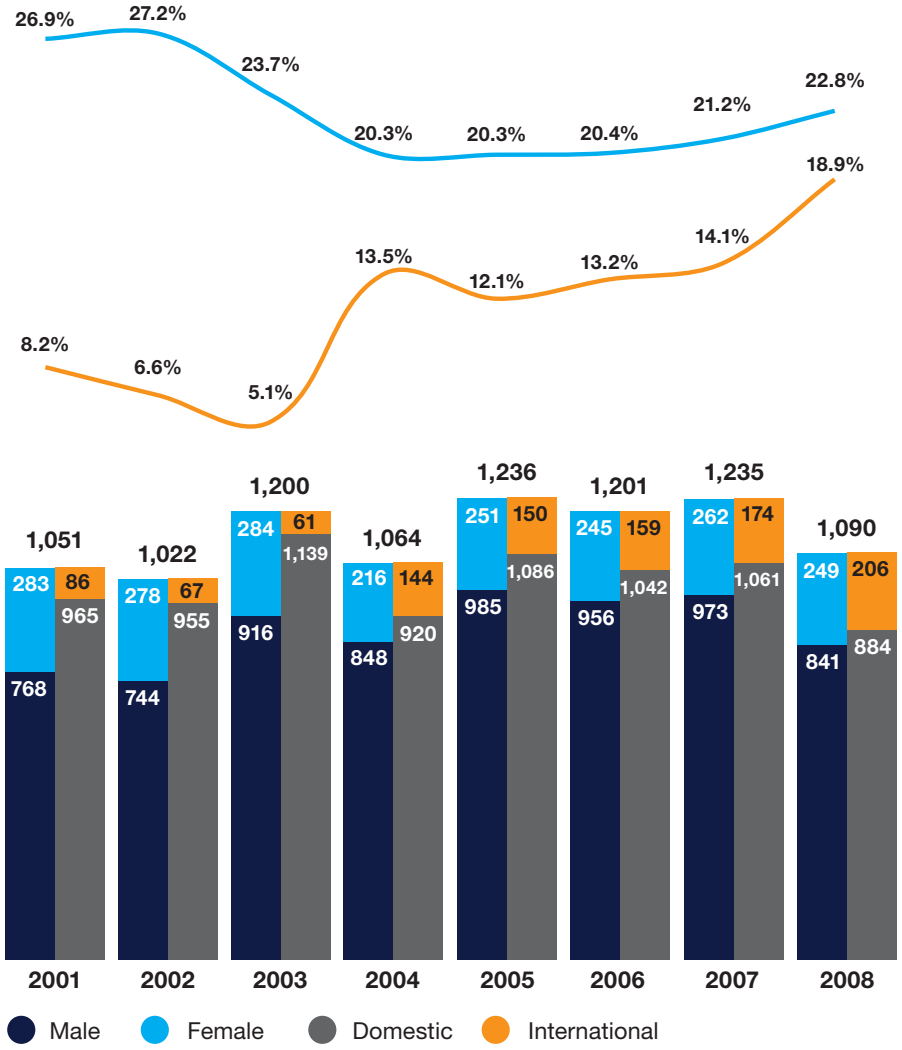
We have made substantial efforts to increase retention through offering enhanced instruction for our First Year students and revising our mathematics courses in First Year. We also built support systems to help younger students cope in a rigorous Engineering curriculum through programs such as Success 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

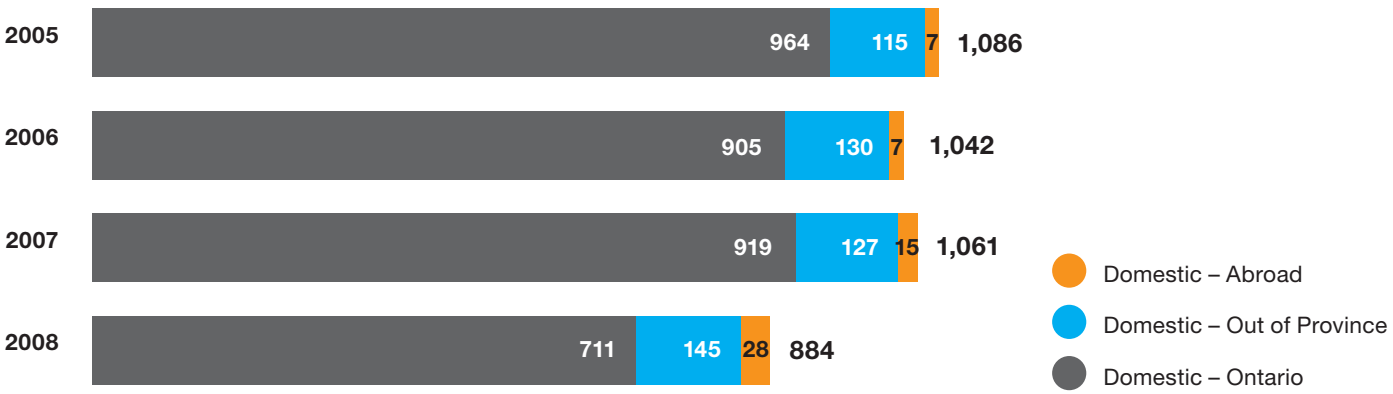
In 2008, 1,090 First Year students joined the Engineering community. This was the most diverse First Year class in our 135-year history, with students from all 10 Canadian provinces, 47 countries, and every continent.

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.

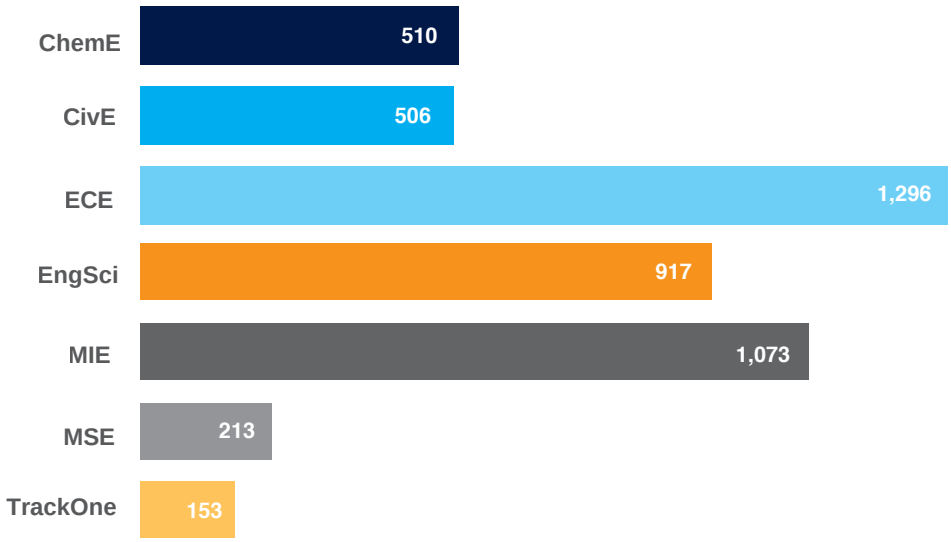



## Figure 4.5
## First Year Domestic Undergraduate Student Headcount 2005–2008




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

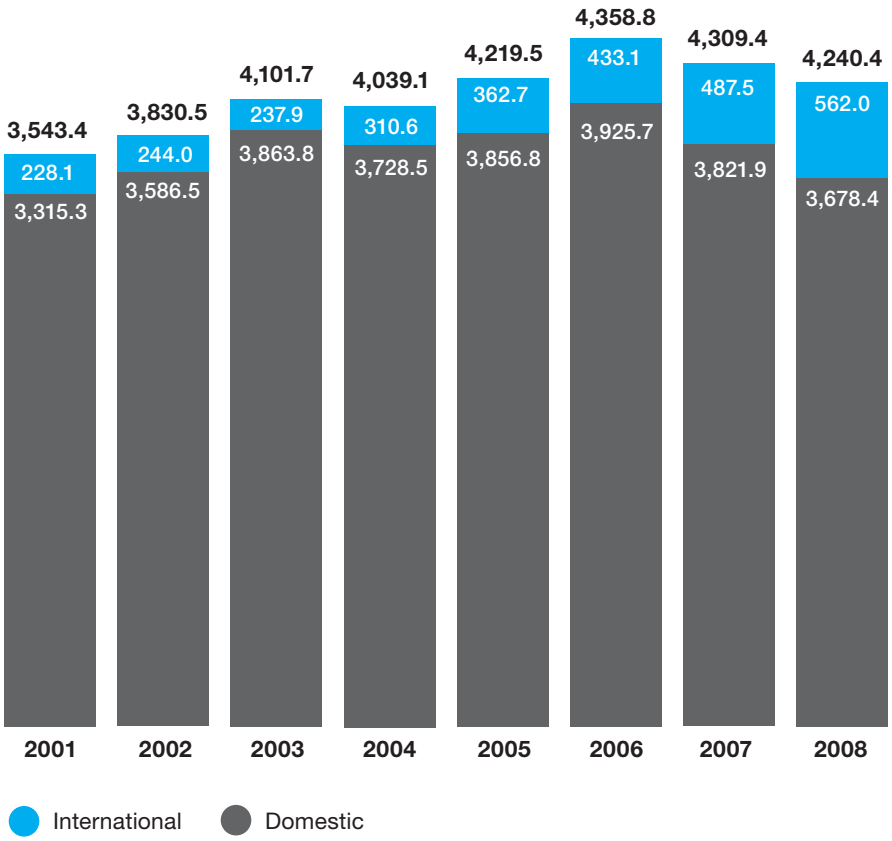
## Figure 4.6
## Undergraduate Student Headcount by Academic Area
## Fall 2008



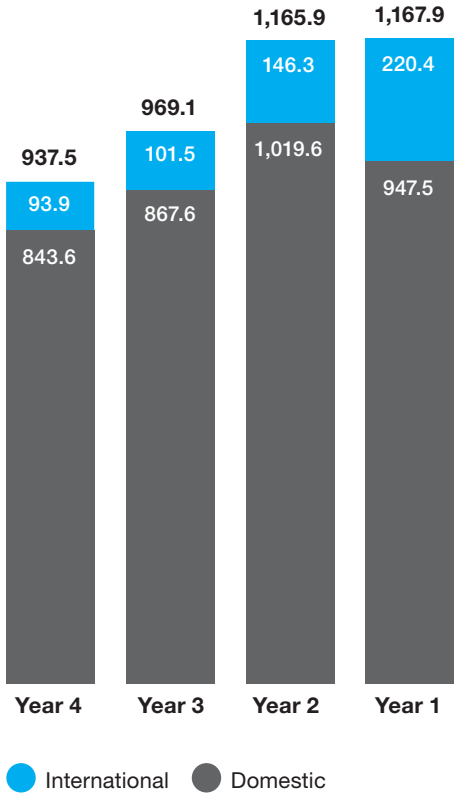

Engineering undergraduate students are enrolled in five Departments (Chemical Engineering & Applied Chemistry, Civil Engineering, Electrical & Computer Engineering, Materials Science & Engineering, and Mechanical & Industrial Engineering), one Division (Engineering Science), and a general First Year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

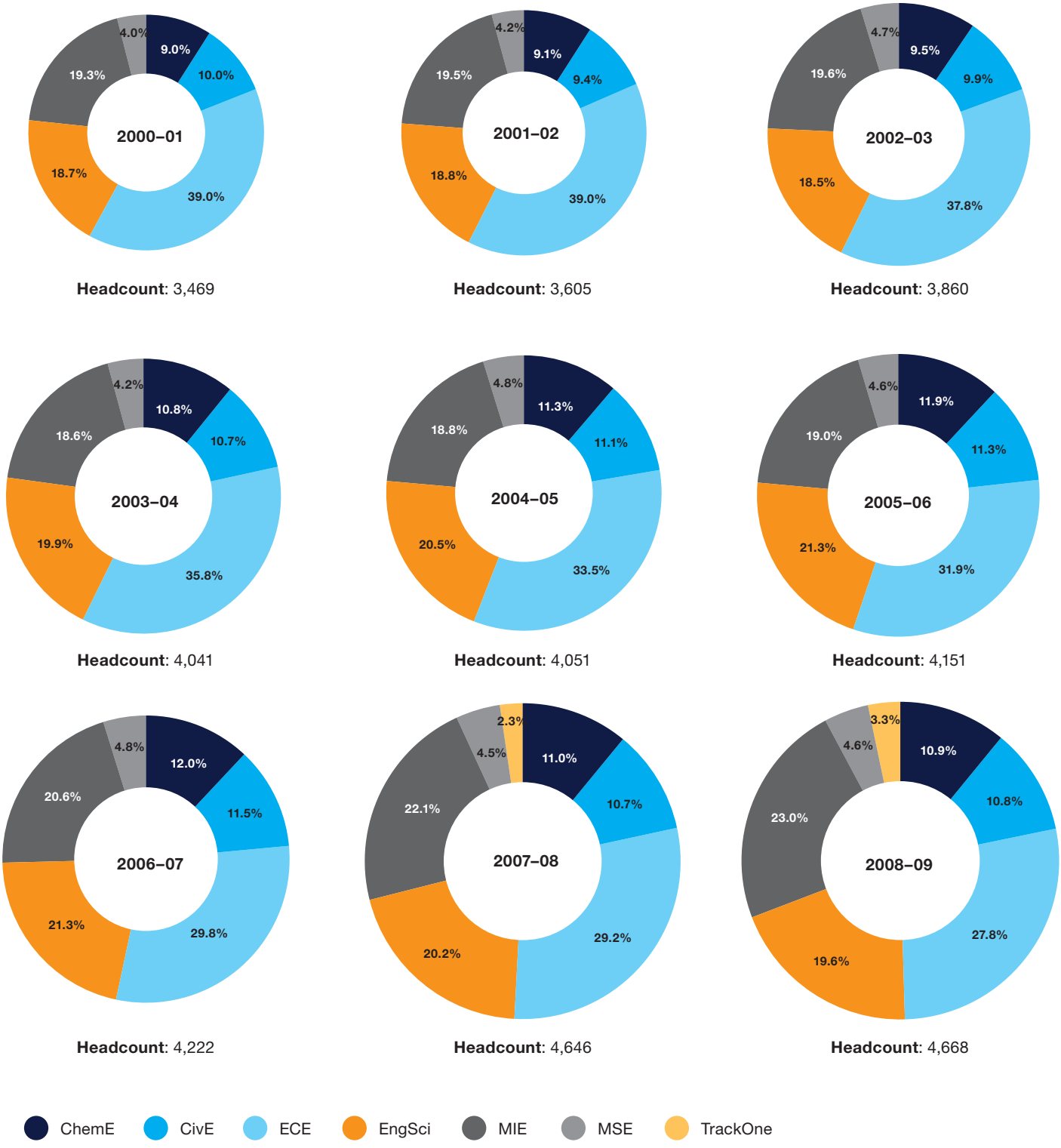



## Figure 4.8
## Full-Time Equivalent Undergraduate Students by Year of Study
## Fall 2008

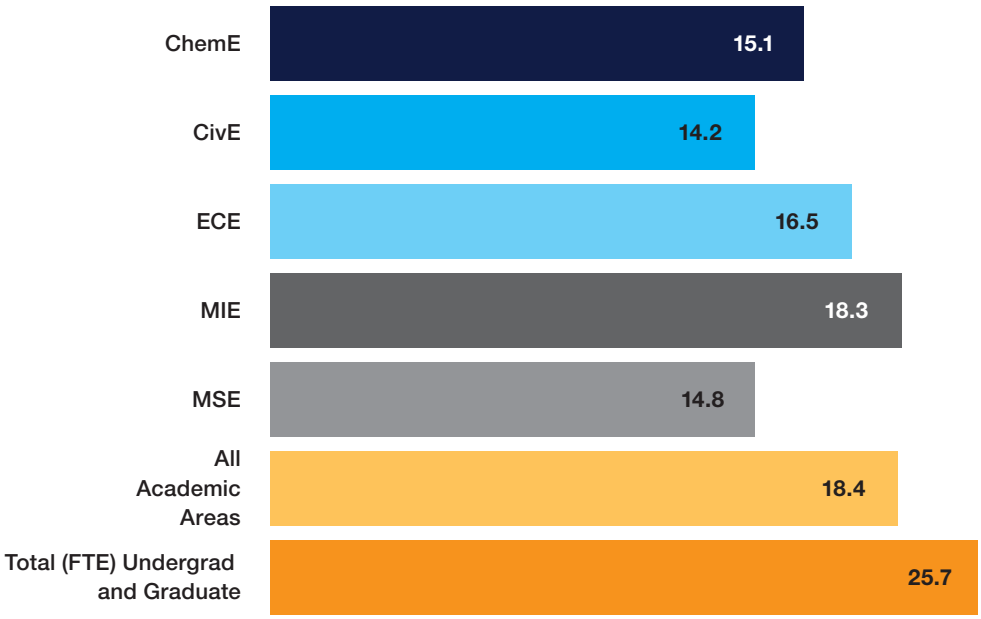


## Figure 4.9
## Undergraduate Student Headcount by Academic Area 2000–2001 to 2008–2009

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.

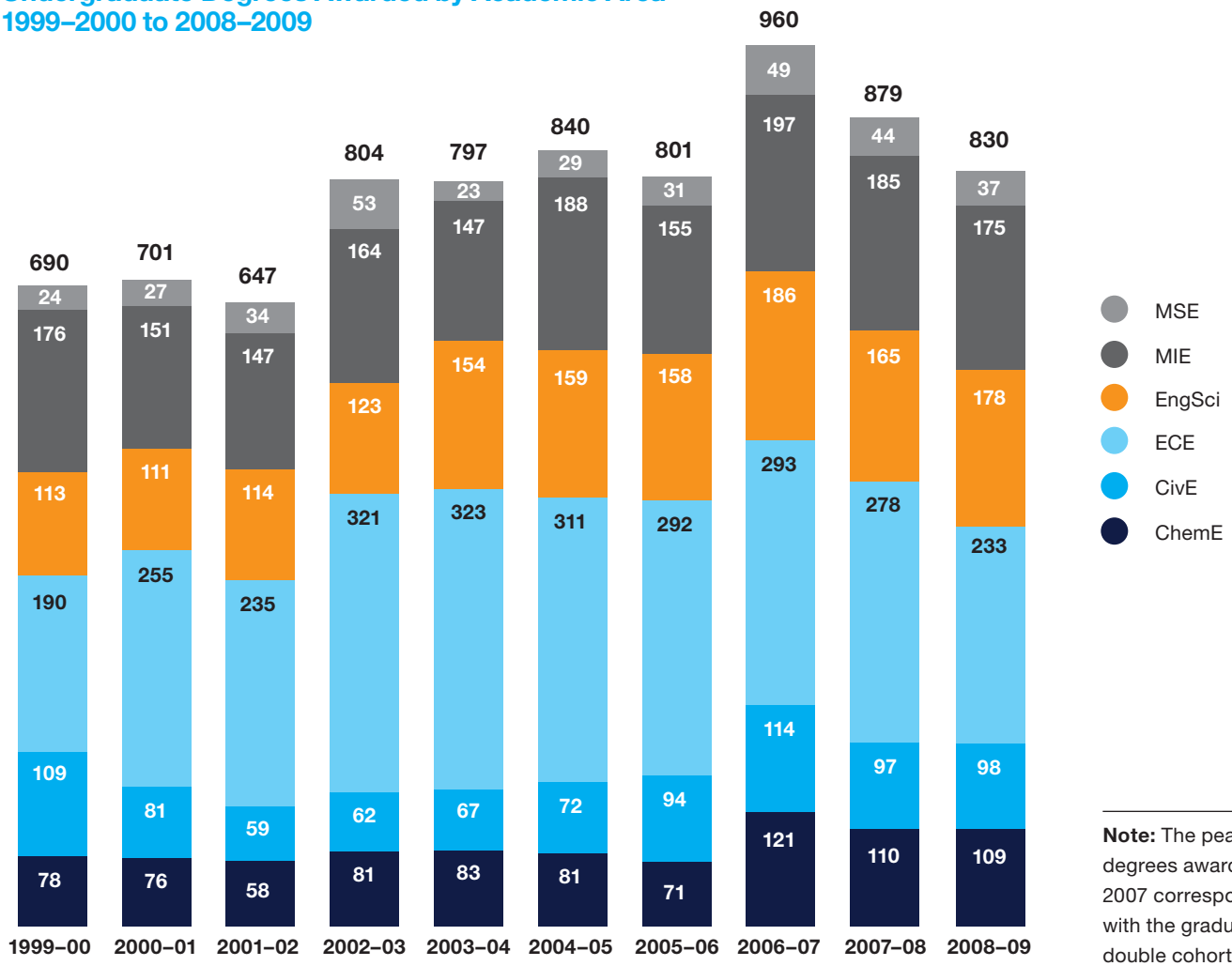


## Figure 4.10
## Full-Time Equivalent Undergraduate Student-Faculty Ratios by Academic Area 2008–2009




**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

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.

### 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

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.

### 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

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

### 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

### 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

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

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.

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

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.

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.

## 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.

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**

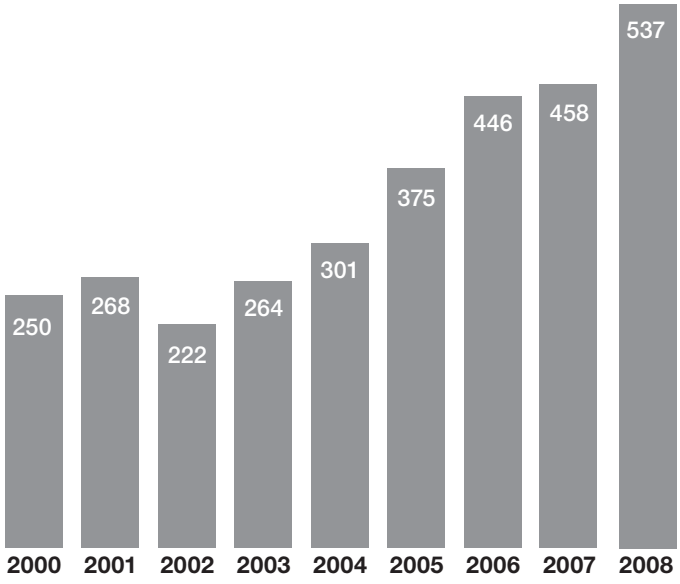



**Figure 4.12b**
**Canadian and International PEY Internship Placements for Engineering Students 2004–2008**

| | 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.

# 5. Graduate Students

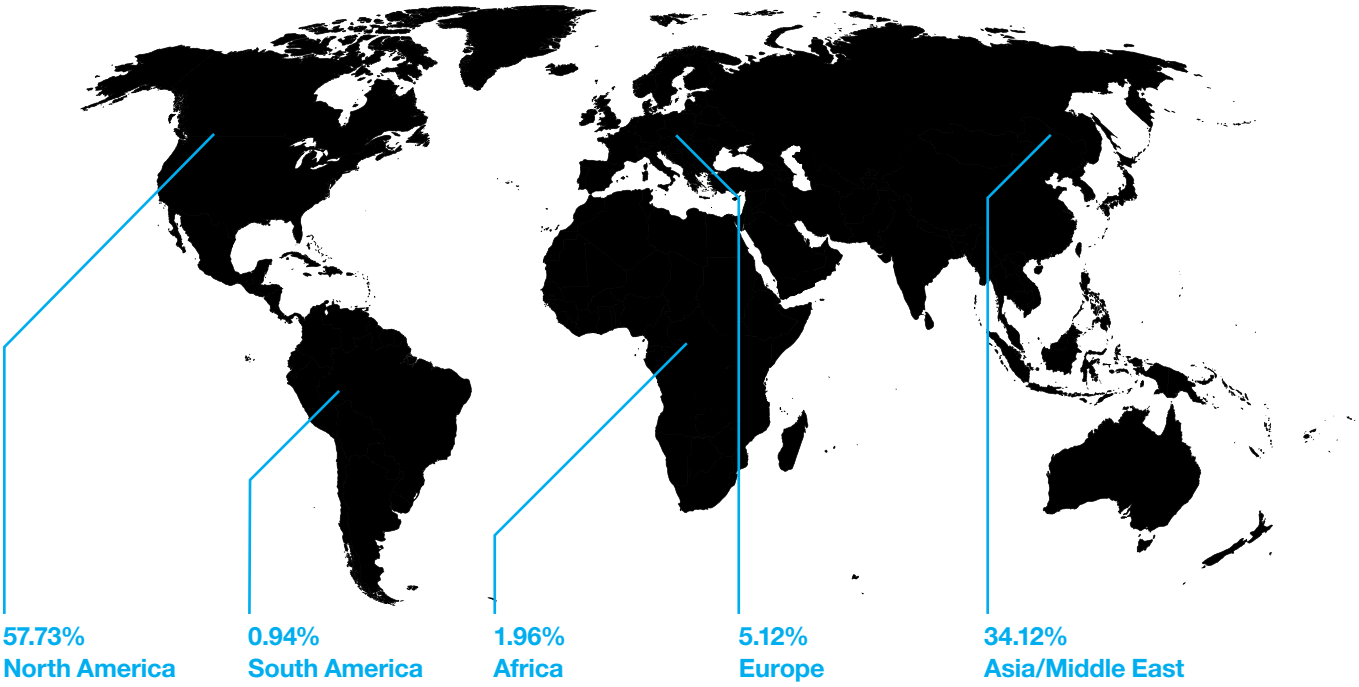
Over the past two years, the Faculty has increased graduate student enrolment and further expanded its innovative graduate programming. These initiatives will foster the next generation of leaders in engineering research and technical innovation, who will help ensure the future economic prosperity of our province and nation.

The Faculty's MEng professional master's program has received considerable attention and both its enrolment and its curriculum have grown quickly. In 2007, the Faculty launched a graduate certificate, as part of the MEng, for engineers interested in pursuing higher-level leadership roles in their profession. The first of its kind in Canada, this certificate in Entrepreneurship, Leadership, Innovation and Technology in Engineering (MEng/ELITE) grew in enrolment by 140% in the past year.

In addition to the MEng/ELITE, the Faculty created a MEng graduate certificate in Engineering and Public Policy (EPP) in 2009, in collaboration with the U of T School of Public Policy and Governance.

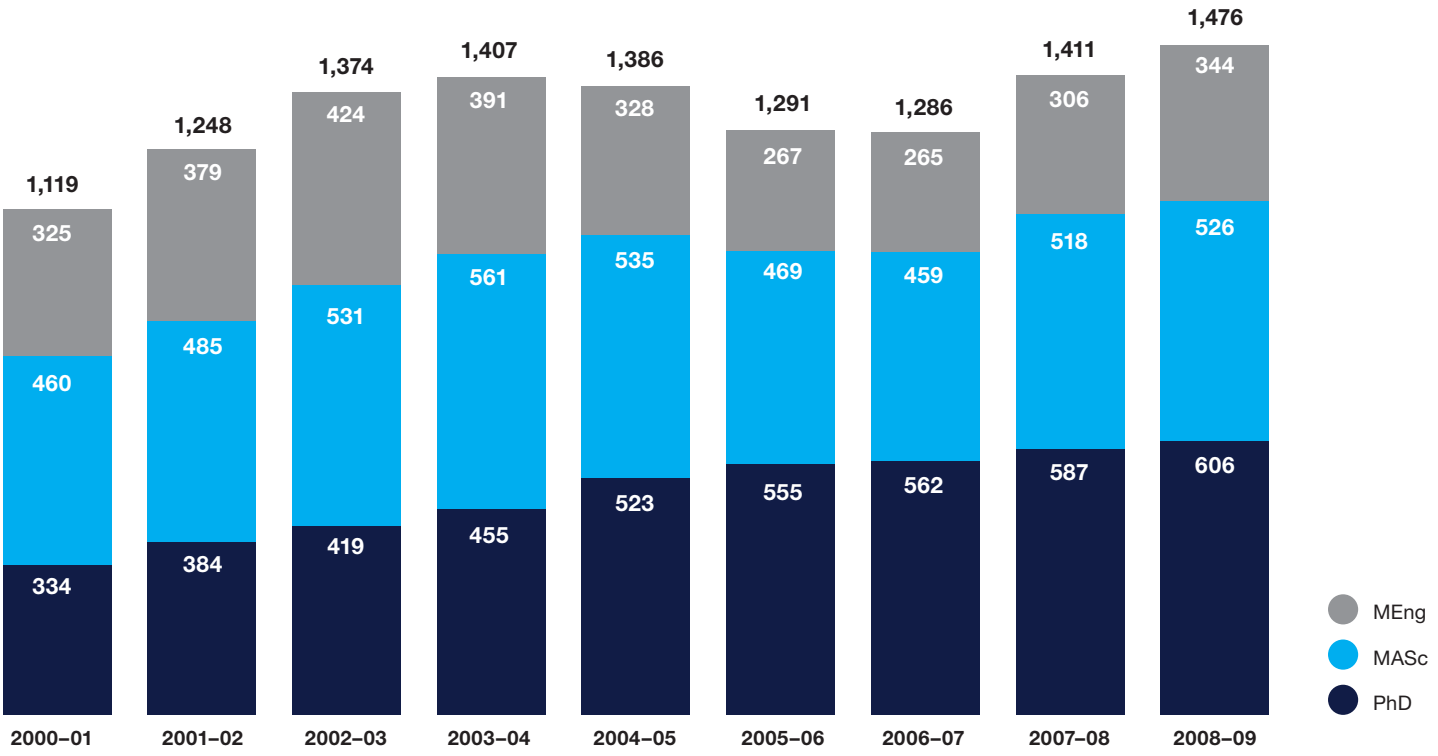
The Prospective Professors in Training (PPIT) program, offered by the Faculty since 2006, prepares future faculty for the rigors of academia, deepens the academic environment, and enriches the experience of our graduate students.

## Figure 5.1
## Cultural Heritage of Graduate Students
## Fall 2008




**Note:** Not Shown – 0.13% 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. high school, 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.

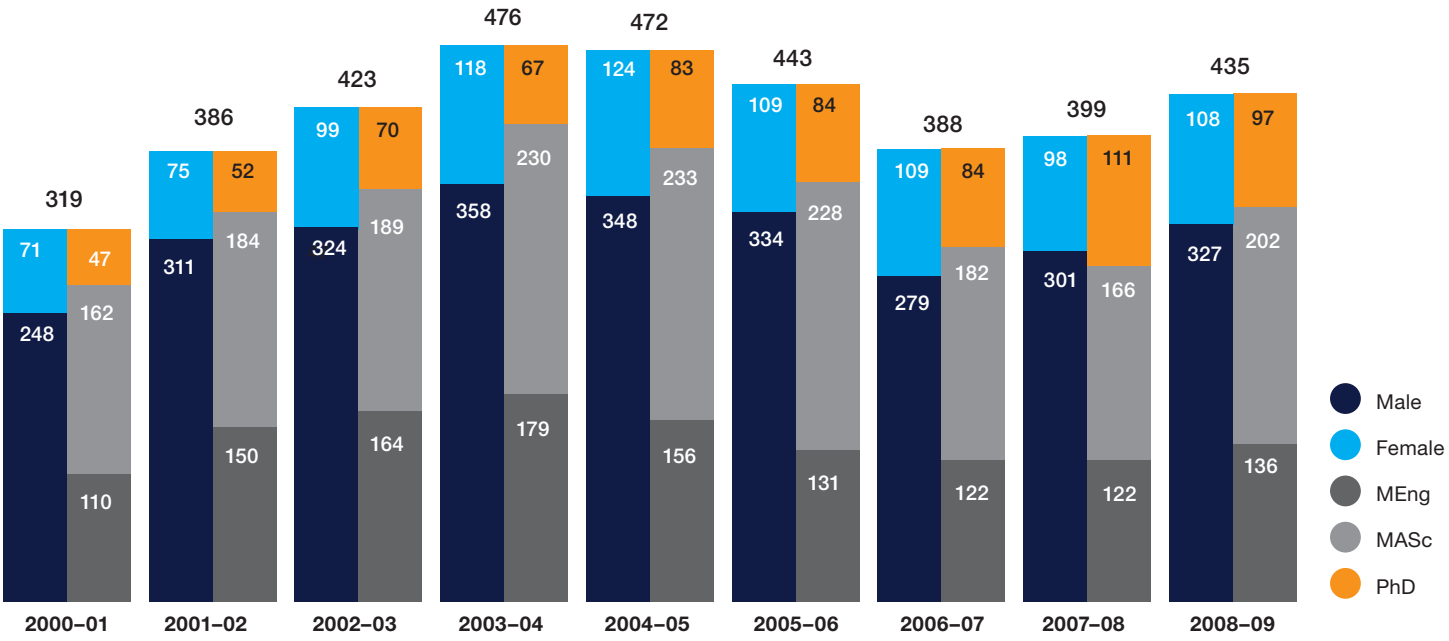
## Figure 5.2
## Graduate Student Headcount by Degree Type
## 2000–2001 to 2008–2009



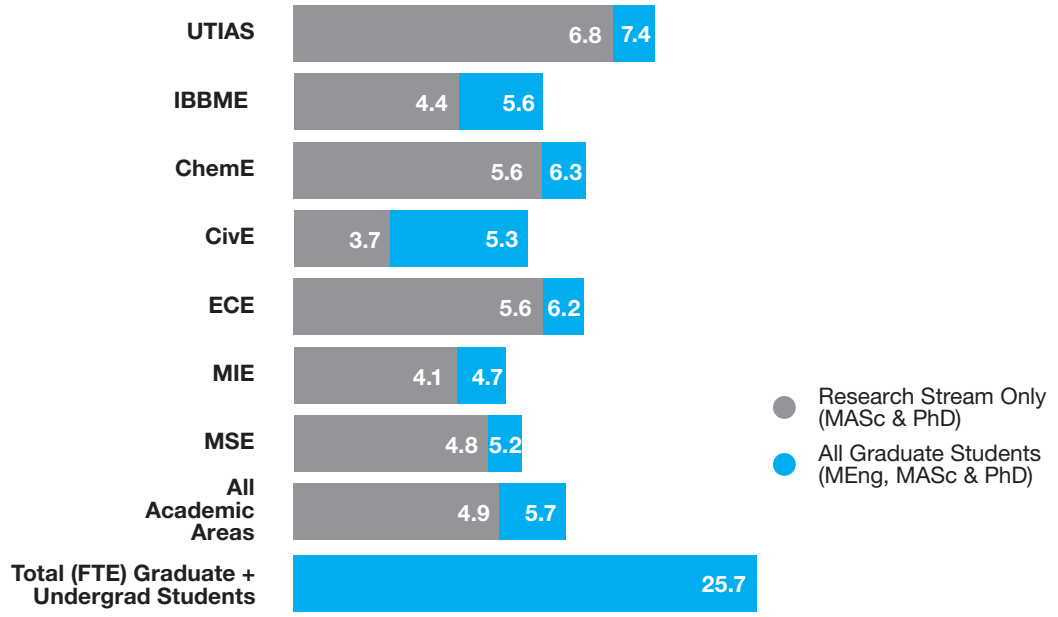
## Figure 5.3
## Graduate Student Enrolment by Full-Time Equivalent (FTE) and Headcount (HC) by Area of Study 2000–2001 to 2008–2009

| | | UTIAS | IBBME | ChemE | CivE | ECE | MIE | MSE | Total |
|---|---|---|---|---|---|---|---|---|---|
| 2000–01 | FTE | 68.6 | 8.0 | 156.2 | 154.4 | 287.0 | 230.4 | 56.2 | **960.7** |
| | HC | 68.6 | 8 | 166 | 188 | 350 | 278 | 59 | **1,119** |
| 2001–02 | FTE | 68.2 | 15.0 | 153.3 | 175.9 | 310.4 | 293.7 | 57.2 | **1,073.7** |
| | HC | 71 | 15 | 161 | 213 | 372 | 356 | 60 | **1,248** |
| 2002–03 | FTE | 84.2 | 22.0 | 148.3 | 196.1 | 358.0 | 313.2 | 68.8 | **1,190.6** |
| | HC | 87 | 22 | 156 | 236 | 421 | 379 | 73 | **1,374** |
| 2003–04 | FTE | 89.9 | 48.0 | 159.4 | 184.2 | 383.6 | 228.5 | 77.0 | **1,230.6** |
| | HC | 92 | 48 | 165 | 222 | 441 | 355 | 84 | **1,407** |
| 2004–05 | FTE | 97.0 | 57.0 | 164.7 | 157.5 | 381.7 | 287.3 | 77.0 | **1,222.2** |
| | HC | 97 | 57 | 171 | 189 | 430 | 358 | 84 | **1,386** |
| 2005–06 | FTE | 85.3 | 52.0 | 142.1 | 150.4 | 380.5 | 278.8 | 71.1 | **1,160.2** |
| | HC | 86 | 52 | 147 | 170 | 428 | 332 | 76 | **1,291** |
| 2006–07 | FTE | 79.6 | 75.0 | 138.5 | 160.3 | 407.3 | 238.8 | 67.5 | **1,167.0** |
| | HC | 81 | 75 | 142 | 182 | 457 | 278 | 71 | **1,286** |
| 2007–08 | FTE | 105.0 | 115.0 | 150.0 | 183.3 | 438.1 | 227.3 | 71.2 | **1,289.9** |
| | HC | 105 | 115 | 157 | 212 | 478 | 270 | 74 | **1,411** |
| 2008–09 | FTE | 122.9 | 140.0 | 167.8 | 184.0 | 415.4 | 237.1 | 82.8 | **1,350.0** |
| | HC | 125 | 140 | 179 | 219 | 442 | 284 | 87 | **1,476** |

## Figure 5.4
## Graduate Degrees Awarded by Degree Type and Gender 2000–2001 to 2008–2009




## Figure 5.5
## Full-Time Equivalent Graduate Student-Faculty Ratios by Academic Area 2008–2009




**Note:** The calculation includes Assistant Professors, Associate Professors and Professors. It should be noted that graduate student–faculty ratios can be difficult to derive precisely. For instance, 22 IBBME academic staff were included to represent the interdisciplinary nature of the interaction graduate students have with faculty from other Departments and Faculties. However, graduate students who conduct research at affiliated research hospitals who are supervised by professors who hold clinical or status–only appointments are not included in our faculty count. Total (FTE) Graduate (MASc, MEng and PhD) and Undergraduate ratio of 25.7 uses FTE faculty including 1 EngSci Lecturer and 4 Lecturers from ECP.

## MEng/ELITE certificate: Entrepreneurship, Leadership, Innovation and Technology in Engineering

In January 2007, the Faculty launched a series of courses in Entrepreneurship, Leadership, Innovation and Technology in Engineering (ELITE). The first of its kind in Canada, the ELITE certificate is specifically designed for engineers who wish to take on more of a leadership role in their work environments – whether by learning to better motivate teams, foster and manage innovation, or by embracing global opportunities.

To graduate with the ELITE certificate, students must complete at least four courses. Students in the MEng program can also take ELITE courses as part of their MEng requirement to enhance their education.

Enrolment in ELITE courses by graduate students has drastically increased over the last three years. Similarly, the number of courses offered has also expanded in the last two years to prepare our students for leadership positions in Engineering.

**Figure 5.6**
**Enrolment in MEng/ELITE**
**2006–2007 to 2008–2009**

| | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|
| **APS 501: Leadership and Leading in Groups and Organizations (ChemE)** | N/O | 7 | 15 |
| **APS 1001: Project Management (CivE)** | 53 | N/O | 105 |
| **APS 1002: Financial Engineering (MIE)** | 10 | 54 | 99 |
| **APS 1003: Professional Education and Instruction (MIE)** | N/O | 23 | 47 |
| **APS 1004: Human Resources Management: An Engineering Perspective (CivE)** | 28 | 33 | 88 |
| **APS 1005: Operations Research for Engineering Management (MIE)** | 10 | 25 | 55 |
| **APS 1088: Entrepreneurship and Business for Engineers (ChemE)** | N/O | 18 | 24 |
| **APS 1201: Topics in Engineering and Public Policy (CivE)** | N/O | 19 | 16 |
| **APS 510/CIV 1099: Innovative Technologies & Organizations in Global Energy (CivE)** | N/O | 8 | 21 |
| **JEI 1901: Technology, Society, and the Environment I (CivE)** | N/O | 15 | 19 |
| **JEI 1902: Technology, Society, and the Environment II (CivE)** | N/O | 3 | 1 |
| **Total Enrolment** | **101** | **205** | **490** |

**Note:** N/O = Not Offered

## MEng/EPP certificate: Engineering and Public Policy

Starting September 2009, the Faculty will introduce a series of courses in Engineering and Public Policy.

Engineers have much to contribute to the creation and implementation of public policy and the work of engineers is heavily impacted by public policy in areas such as energy, water use, sustainable design, sustainable building materials, health and safety, transportation and urban renewal.

In collaboration with the School of Public Policy and Governance, the Faculty identified a series of courses that will provide students with foundations in the field of public policy and the opportunity to pursue specific aspects of the discipline, including transportation, environmental decision making technology, global energy systems, infrastructure economics, and strategic policy implementation. Students will receive a certificate to acknowledge successful completion of four Engineering and Public Policy courses as part of the MEng program.

As of Fall 2009, the following EPP courses will be offered:

| | |
|---|---|
| **PPG1004** | **Quantitative Methods for Policy Analysis** |
| **CIV531** | **Transport III – Planning** |
| **ENV1001** | **Environmental Decision Making** |
| **PPG1001** | **The Policy Process** |
| **APS510** | **Innovative Technologies and Organizations in Global Energy Systems** |
| **APS1201** | **Topics in Engineering and Public Policy** |
| **CIV1310** | **Infrastructure Economics** |
| **PPG1007** | **Putting Policy into Action: Strategic Implementation** |
| **MIE561** | **Healthcare Systems** |

## Prospective Professors in Training Program

Initiated as a pilot in 2006–2007, Prospective Professors in Training (PPIT) was officially launched in 2007–2008.

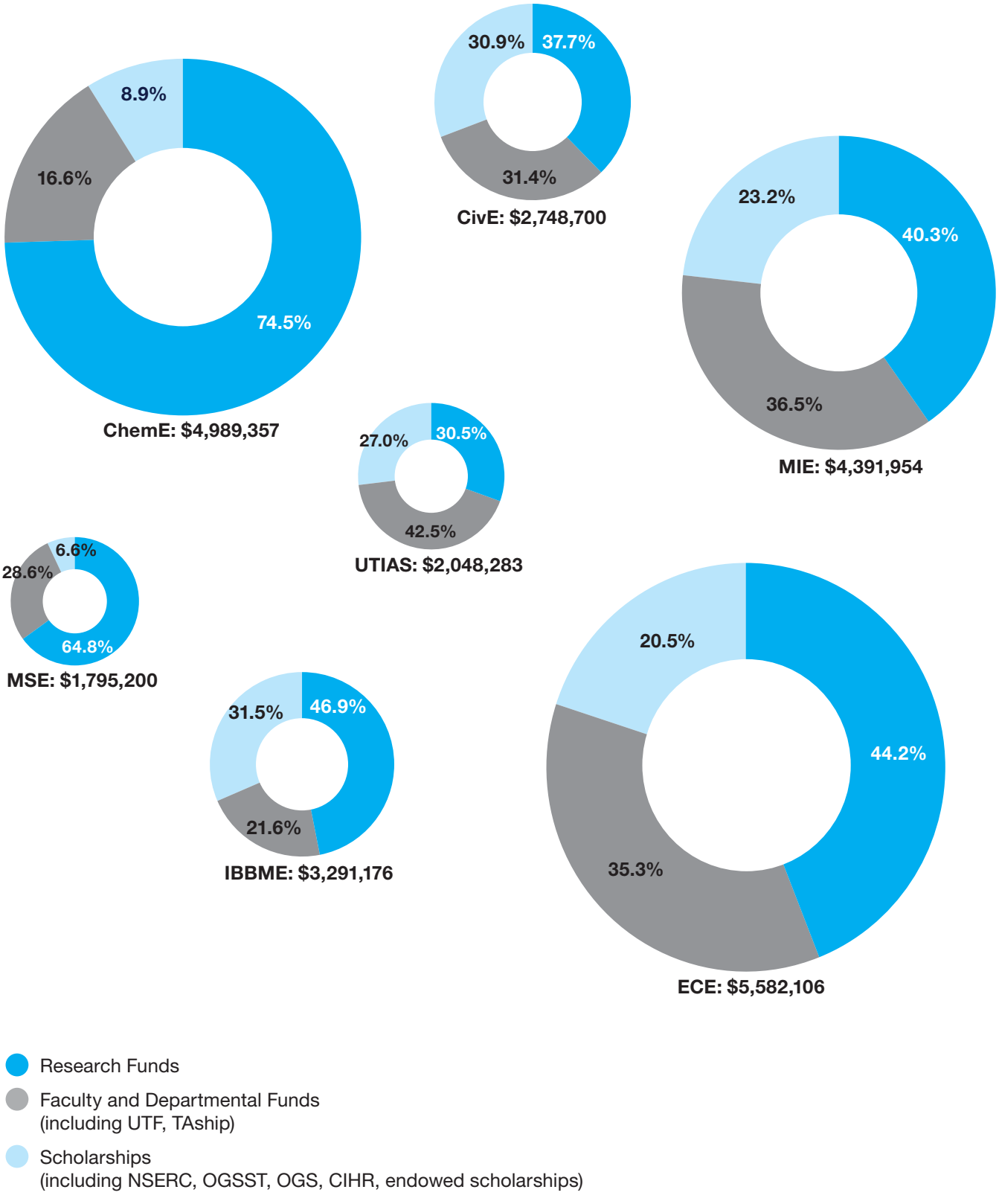
The PPIT program prepares soon-to-be faculty for the rigors of an academic position. The program includes seminars that teach students how to apply for academic positions and grants, how to manage a classroom, how to start research programs, and topics in teaching and learning. Elective seminars are also offered by the Office of Teaching Advancement and the Teaching Assistants Training Program.

**Figure 5.7**
**Enrolment in PPIT**
**2006–2007 to 2008–2009**

| | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|
| **UTIAS** | 1 | 2 | 0 |
| **IBBME** | 1 | 1 | 3 |
| **ChemE** | 5 | 5 | 2 |
| **CivE** | 5 | 7 | 4 |
| **ECE** | 6 | 11 | 7 |
| **MIE** | 4 | 7 | 4 |
| **Total** | **22** | **33** | **20** |

**Note**: In 2006–2007, 22 students enrolled, 19 graduated, 3 withdrew. In 2007–2008, 33 students enrolled, 26 graduated, 3 withdrew, and 4 received extensions. In 2008–2009, these 20 students include 4 extensions; graduation and withdrawal numbers will be available in Fall 2009.

**Figure 5.8**
## Graduate Student Funding by Academic Area 2008–2009




**Note:** IBBME Faculty and Departmental Funds include internships.

# 6. Research

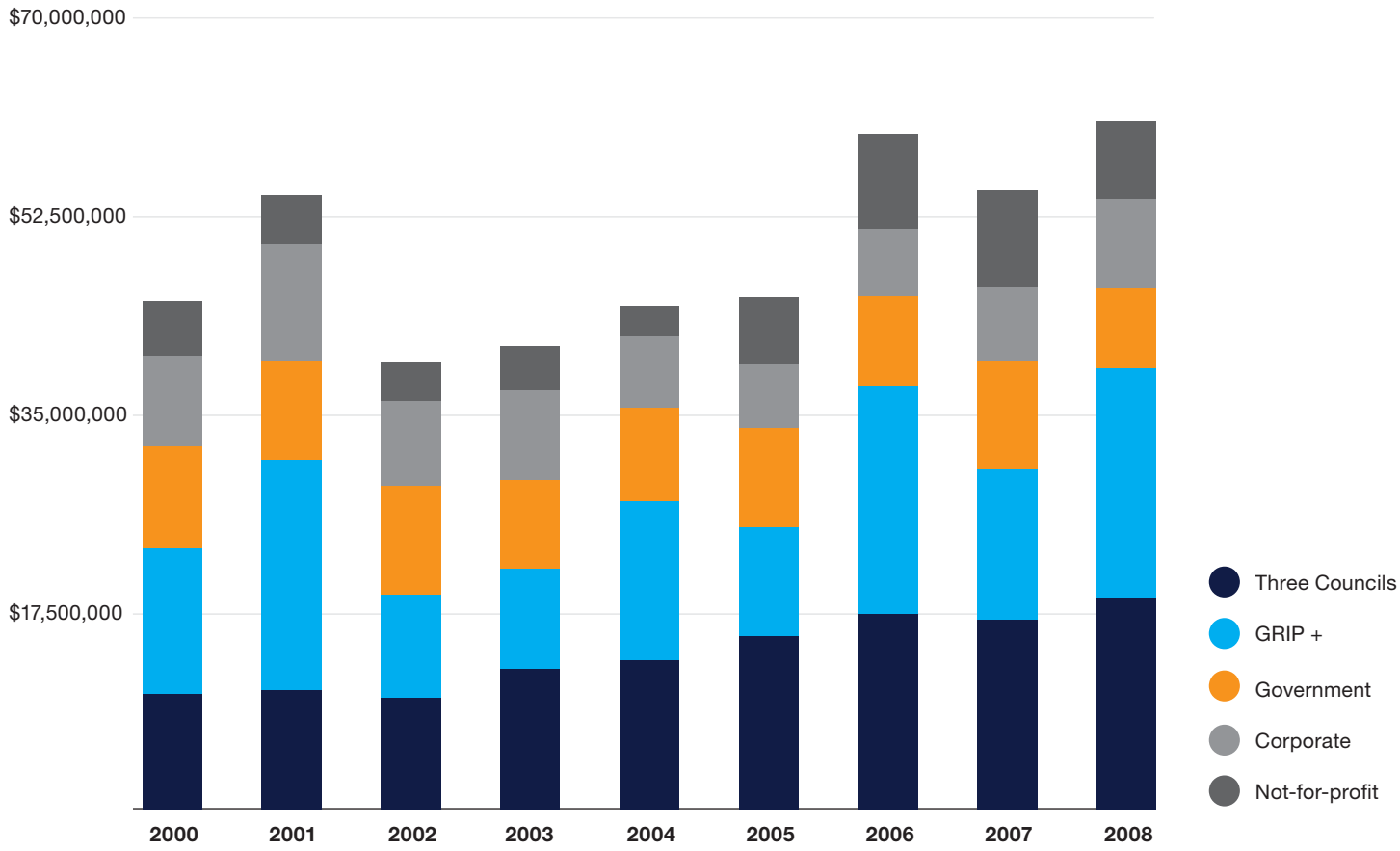
Our Faculty members are leaders in research and technological innovation on both national and international stages. They are recognized not just through the awards and honours they receive, but also through their contributions to knowledge creation, technology transfer, and by the volume of research funding they generate.

In 2008, the Faculty of Applied Science and Engineering received more than $60.97M in funding – an increase of 35% from 2000 – and we lead all Canadian institutions on this measure. Indeed, over the past five years, we have received the largest share of funding from the Natural Sciences and Engineering Research Council (NSERC) of Canada among our Canadian peers.

The Faculty's collaborative multidisciplinary initiatives also received strong support in 2008–2009, securing three NSERC CREATE programs and more than $15.5M from the Canada Foundation for Innovation. Over the same period, our faculty members held 24 Canada Research Chairs and 28 Endowed Research Chairs, among other prestigious research appointments.

The Faculty excels at turning research into innovations. Engineering faculty have accounted for 43% of all invention disclosures at the University of Toronto over the past eight years and, since the 1950s, U of T engineers have launched more than 100 spin-off companies.

## Figure 6.1
## Research Funding by Year and Source 2000–2008




| | Three Councils ($) | GRIP + ($) | Government ($) | Corporate ($) | Not-for-profit ($) | Year Total ($) |
|---|---|---|---|---|---|---|
| **2000** | 10,211,817 | 12,900,987 | 8,953,344 | 8,004,522 | 4,800,943 | **44,871,613** |
| **2001** | 10,621,383 | 20,288,328 | 8,624,511 | 10,346,764 | 4,402,193 | **54,283,179** |
| **2002** | 9,936,509 | 9,084,332 | 9,528,233 | 7,494,002 | 3,395,584 | **39,438,660** |
| **2003** | 12,459,506 | 8,793,897 | 7,815,247 | 7,862,294 | 3,978,904 | **40,909,848** |
| **2004** | 13,220,402 | 13,995,988 | 8,237,005 | 6,294,731 | 2,705,886 | **44,454,012** |
| **2005** | 15,379,348 | 9,535,634 | 8,740,544 | 5,637,079 | 5,912,609 | **45,205,214** |
| **2006** | 17,324,786 | 20,025,121 | 7,966,509 | 5,804,219 | 8,405,940 | **59,544,575** |
| **2007** | 16,799,890 | 13,279,928 | 9,477,043 | 6,561,799 | 8,628,896 | **54,747,556** |
| **2008** | 18,742,373 | 20,309,400 | 7,067,420 | 7,983,775 | 6,871,287 | **60,974,305** |

**Note:** Data is current as of January 2009. GRIP + = Government Research Infrastructure Program; "Three Councils" includes funding from the Canadian Institutes for Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC), and the Social Sciences and Humanities Research Council (SSHRC); Engineering research typically receives funding from NSERC and CIHR, with SSHRC typically for social sciences and humanities research.

Figure 6.2a
**Canadian Peer Universities vs. University of Toronto Engineering Share of Natural Sciences and Engineering Research Council of Canada Funding, Cumulative 5-Year Share 2003–2004 to 2007–2008**

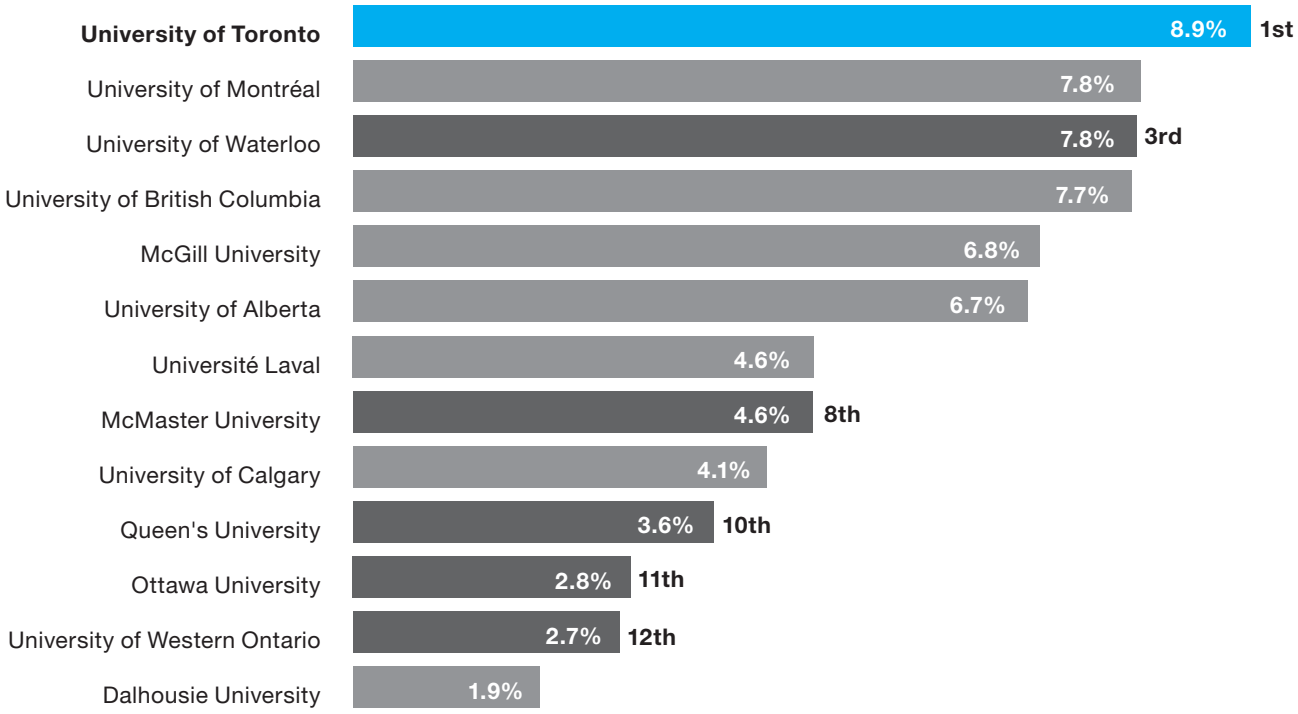
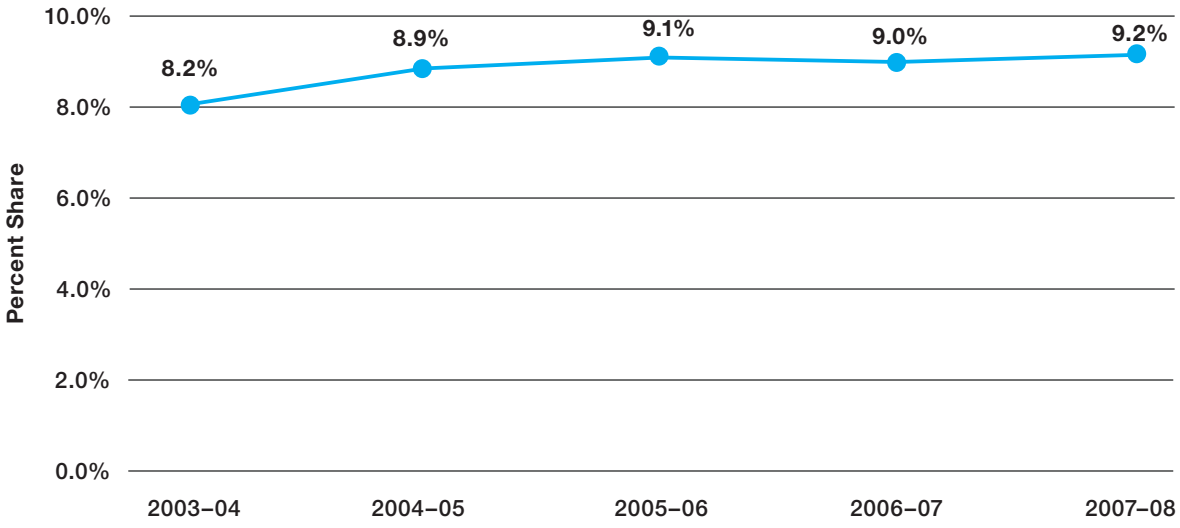
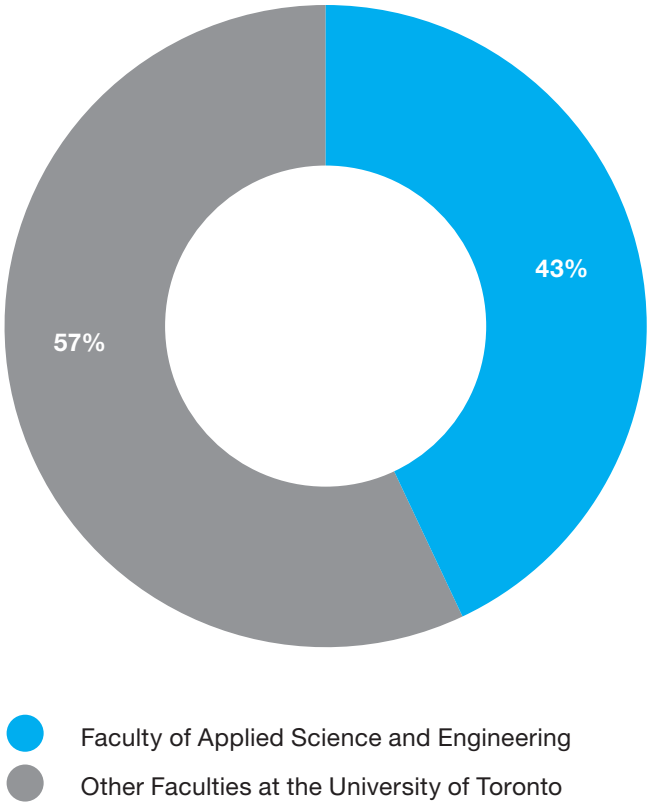



Figure 6.2b
**University of Toronto Share of NSERC Funding in Engineering 2003–2004 to 2007–2008**



## Figure 6.3a
## Total University of Toronto Invention Disclosures 2000–2008




The high number of inventions in Engineering indicates our potential for commercialization and knowledge transfer, and is also an important indicator of the social and economic benefit of Engineering innovation.

All inventions at U of T are required, by the University's Inventions Policy, to fully and completely disclose the invention to the University. All rights to the invention are then jointly owned by the University and the inventor, in most cases. The inventor can commercialize the invention, which results in the high number of spin-off companies in Engineering, also outlined in this Chapter.

The following table shows the inventions of U of T Engineering faculty that have been disclosed to U of T. Where all inventors for an invention are from one Department, that Department is credited with one disclosure; when inventors are from multiple Departments, each Department is credited with an equal portion of the invention.

## Figure 6.3b
## Engineering Invention Disclosures by Academic Area 2000–2008

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| **UTIAS** | 1.0 | 0.0 | 0.0 | 1.0 | 3.5 | 3.0 | 0.0 | 0.0 | 1.0 | **9.5** |
| **IBBME** | 1.5 | 16.2 | 6.5 | 4.9 | 4.5 | 10.7 | 8.6 | 11.3 | 9.2 | **73.4** |
| **ChemE** | 7.8 | 12.2 | 2.0 | 4.7 | 6.5 | 6.0 | 2.5 | 4.8 | 4.8 | **51.3** |
| **CivE** | 1.0 | 1.7 | 1.0 | 2.0 | 0.0 | 9.0 | 0.0 | 1.0 | 3.5 | **19.2** |
| **ECE** | 16.8 | 18.3 | 17.5 | 23.8 | 17.2 | 24.9 | 44.2 | 40.0 | 39.7 | **242.4** |
| **EngSci** | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.2 | 0.0 | 0.0 | 0.3 | **1.5** |
| **MSE** | 7.7 | 2.0 | 3.0 | 9.3 | 11.4 | 6.0 | 4.3 | 0.8 | 6.7 | **51.2** |
| **MIE** | 7.0 | 11.3 | 4.0 | 3.8 | 16.2 | 15.7 | 9.0 | 15.9 | 19.3 | **102.2** |
| **Total** | **42.8** | **61.7** | **34.0** | **49.5** | **60.3** | **75.5** | **68.6** | **73.8** | **84.5** | **550.7** |

## Figure 6.4
## Engineering Spin-off Companies 1951–2009

Commercialization occurs through the licensing of an invention to an existing company, or through the creation of a spin-off company to launch the new invention. The number of new licenses created indicates our level of engagement with private sector firms, in addition to the direct contribution to the social and economic development of our research community.

| Est. | Company Name | Engineering Affiliation | Department |
|---|---|---|---|
| 2009 | Chip Care Corp. | J. Stewart Aitchison | ECE |
| 2009 | Peraso Technologies Inc. | Co-founded by Sorin Voinigescu | ECE |
| 2008 | Incise Photonics Inc. | Peter Herman | ECE |
| 2008 | Arch Power Inc. | Reza Iravani | ECE |
| 2008 | Quantum Dental Technologies | Andreas Mandelis | MIE |
| 2008 | Ablazeon Inc. | Javad Mostaghimi | MIE |
| 2008 | AXAL Inc. | Milos Popovic and Egor Sanin | IBBME |
| 2008 | Simple Systems Inc. | Milos Popovic, Aleksandar Prodić and Armen Baronijan | ECE, IBBME |
| 2007 | Viewgenie Inc. | Parham Aarabi | ECE |
| 2007 | Modiface Inc. | Parham Aarabi | ECE |
| 2007 | Neurochip Inc. | Berj Bardakjian | IBBME |
| 2007 | Inometrix Inc. | Michael Galle | ECE |
| 2007 | Cast Connex Corp. | Jeffrey Packer and Constantin Christopoulos | CivE |
| 2007 | 002122461 Ontario Inc. | Harry Ruda | MSE |
| 2007 | Elastin Specialties | Kimberly Woodhouse | ChemE |
| 2006 | Anviv Mechatronics Inc. (AMI) | Andrew Goldenburg | MIE |
| 2006 | Hydratek and Associates Inc. | Bryan Karney and Fabian Papa | CivE |
| 2006 | Vennsa Technologies Inc. | Andreas Veneris and Sean Safarpour | ECE |
| 2006 | Metabacus Inc. | Jianwen Zhu | ECE |
| 2005 | Greencore Composites | Mohini Sain | Forestry, ChemE |
| 2004 | Tissue Regeneration Therapeutics Inc. (TRT) | J.E. Davies | IBBME |
| 2004 | Field Metrica Inc. (FMI) | Tim DeMonte and Richard Yoon | IBBME |
| 2003 | Vocalage Inc. | Mark Chignell | MIE |
| 2003 | ArchES Computing Systems Corp. | Paul Chow | ECE |
| 2003 | Norel Optronics Inc. | Zhenghong Lu | MSE |
| 2003 | 1484667 Ontario Inc. | Brad Saville | ChemE |
| 2002 | OMDEC Inc. | Andrew K.S. Jardine | MIE |
| 2002 | MatRegen Corp. | Molly Shoichet | IBBME, ChemE |
| 2002 | Information Intelligence Corp. (IIC) | Burhan Turksen | MIE |
| 2001 | Interface Biologics Inc. | Paul Santerre | IBBME |
| 2001 | Fox-Tek | Rod Tennyson | UTIAS |
| 2001 | Insception Biosciences | Peter Zandstra | IBBME |
| 2000 | Biox Corp. | David Boocock | ChemE |
| 2000 | Virtek Engineering Science Inc. | Andrew Goldenberg | MIE |
| 2000 | Photo-Thermal Diagnostics Inc. | Andreas Mandelis | MIE |
| 2000 | Simulent Inc. | Javad Mostaghimi | MIE |
| 1999 | em2 Inc. | J.E. Davies | IBBME |
| 1999 | Accelight Networks Inc. | Alberto Leon-Garcia and Paul Chow | ECE |
| 1999 | Soma Networks | Michael Stumm and Martin Snelgrove | ECE |
| 1999 | Vivosonic Inc. | Yuri Sokolov and Hans Kunov | IBBME |
| 1998 | BoneTec Corp. (Now a wholly owned subsidiary of TRT) | J.E. Davies and Molly Shoichet | IBBME |
| 1998 | BANAK Inc. | Andrew K.S. Jardine | MIE |
| 1998 | Snowbush Microelectronics | Kenneth Martin and David Johns | ECE |
| 1998 | 1208211 Ontario Ltd. / Regen STARR | Robert Pilliar, Rita Kandel and Marc Grynpas | IBBME |
| 1998 | Right Track CAD Corp. | Jonathan Rose | ECE |
| 1998 | SMT HydraSil | Rod Tennyson | UTIAS |
| 1997 | Rimon Therapeutics | Michael Sefton | IBBME, ChemE |
| 1996 | Rocscience Inc. | John Curran | CivE |
| 1996 | OANDA Corp. | Michael Stumm | ECE |
| 1995 | Electrobiologics | Paul Madsen | IBBME |

| | | | |
|---|---|---|---|
| 1995 | Tribokinetics Inc. | Raymond Woodhams | ChemE |
| 1995 | Hydrogenics Corp. | | MIE |
| 1995 | Amilog Systems | | MIE |
| 1994 | Key Lime Co. | Honghi Tran | ChemE |
| 1994 | Trantek Power | | ECE |
| 1993 | Electro Photonics | Raymond Measures | UTIAS |
| 1993 | SmartSpeaker Corp. | Anees Munshi | ECE |
| 1993 | SAFE Nozzle Group | Honghi Tran | ChemE |
| 1993 | Liquid Metal Sonics Ltd. | | MSE |
| 1992 | Novator Systems Ltd. | Mark Fox | MIE |
| 1992 | Gao Research & Consulting Ltd. | Frank Gao | ECE |
| 1992 | Paul Madsen Medical Devices | Hans Kunov | IBBME |
| 1992 | Polyphalt Inc. | Raymond Woodhams | ChemE |
| 1992 | Condata Technologies Ltd. | | ECE |
| 1991 | Redrock Solvers Inc. | Michael Carter | MIE |
| 1991 | Minnovex | Glenn Dobby | MSE |
| 1991 | LinShin Canada Inc. | | IBBME |
| 1991 | Advent Process Engineering Inc. | | MSE |
| 1990 | Fibre Metrics | Dale Hogg | UTIAS |
| 1989 | Apollo Environmental Systems Corp. | John Harbinson | ChemE |
| 1989 | Translucent Technologies Inc. | Paul Milgram | MIE |
| 1989 | Xiris Automation Inc. | Cameron Serles | MIE |
| 1989 | Integrity Testing Laboratory Inc. (ITL) | | UTIAS |
| 1988 | Food BioTek Corp. | Leon Rubin | ChemE |
| 1988 | Advanced Materials Technologies | Steven Thorpe | MSE |
| 1986 | EHM Rehabilitation Technologies | Pomeranz Salansky | UTIAS |
| 1986 | LACEC Energy Systems Inc. | Charles Ward | MIE |
| 1985 | Electrocaps Inc. | J. Smith | ChemE |
| 1985 | Katosizer Industries Ltd. | W. Snelgrove | ECE |
| 1985 | El-Mar Inc. | | IBBME |
| 1985 | Tibur-Howden | | MSE |
| 1984 | Ergotechnics | P. Foley | MIE |
| 1984 | MERP Enhanced Composites Inc. | Michael Piggott | ChemE |
| 1984 | ABIT Systems Inc. | Burhan Turksen | MIE |
| 1983 | Human Factors North | N. Moray | MIE |
| 1982 | Engineering Services Inc. (ESI) | Andrew Goldenberg | MIE |
| 1982 | DMER | D. Mackay | ChemE |
| 1982 | Owl Instruments | J.W. Smith | IBBME |
| 1980 | SatCon Power Systems Canada Ltd. | Shashi Dewan | ECE |
| 1980 | Dynacon Inc. | Peter Hughes | UTIAS |
| 1980 | Almax Ltd. | G. Sinclair | ECE |
| 1978 | Hummel Energy Systems Ltd. | R.L. Hummel | ChemE |
| 1978 | Aurora Scientific Inc. | David James | MIE |
| 1976 | Kings Engineering Associates Ltd. | Iain Currie | MIE |
| 1976 | Hooper & Angus Consulting Engineers | Frank Hooper | MIE |
| 1975 | General Comminution Inc. | Olev Trass | ChemE |
| 1974 | MDS Sciex – Division of MDS Inc. | Barry French | UTIAS |
| 1974 | Envirogetics | Frank Hooper | MIE |
| 1974 | Tibur Metals Inc. | | MSE |
| 1973 | Hooper & Hix, Engineers and Architects | Frank Hooper | MIE |
| 1970 | Eco-Tec Ltd. | R. Hunter | ChemE |
| 1968 | Vibron | D. Allen | MIE |
| 1968 | Electrical Engineering Consolidated Ltd. | K.C. Smith | ECE |
| 1966 | Aercol | | UTIAS |
| 1964 | Chemical Engineering Research Consultants | W. Graydon | ChemE |
| 1960 | Integral Apparatus Ltd. | Frank Hooper | MIE |
| 1951 | Sinclair Technologies Inc. | G. Sinclair | ECE |

**Note:** This includes all spin-off companies on file with the U of T Innovations Group, and as added by faculty.

## Figure 6.5
## Research Chairs
## 2008–2009

| Chair Title | Chairholder | Sponsor | Tier | Department |
|---|---|---|---|---|
| Alumni Chair in Bioengineering | Cristina Amon | Endowed | | MIE |
| Bahen/Tanenbaum Chair in Civil Engineering | Michael Collins | Endowed | | CivE |
| Bahen/Tanenbaum Chair in Civil Engineering | Jeffrey Packer | Endowed | | CivE |
| Bell Chair in Multimedia | Dimitrios Hatzinakos | Endowed | | ECE |
| Bell University Labs Chair in Computer Engineering | Baochun Li | Endowed | | ECE |
| Bell University Labs Chair in Software Engineering | Hans-Arno Jacobsen | Endowed | | ECE |
| Canada Research Chair in Autonomic Service Architecture | Alberto Leon-Garcia | NSERC | Tier 1 | ECE |
| Canada Research Chair in Diffusion-Wave Sciences and Technologies | Andreas Mandelis | NSERC | Tier 1 | MIE |
| Canada Research Chair in Intelligent Transportation Systems | Baher Abdulhai | NSERC | Tier 2 | CivE |
| Canada Research Chair in Information Processing and Machine Learning | Brendan Frey | NSERC | Tier 2 | ECE |
| Canada Research Chair in Molecular Imaging | Christopher Yip | CIHR | Tier 2 | ChemE |
| Canada Research Chair in Mircocellular Plastics | Chul Park | NSERC | Tier 1 | MIE |
| Canada Research Chair in Computational Aerodynamics and Environmentally Friendly Aircraft Design | David Zingg | NSERC | Tier 1 | UTIAS |
| Canada Research Chair in Nanotechnology | Ted Sargent | NSERC | Tier 2 | ECE |
| Canada Research Chair in Communication Algorithms | Frank Kschischang | NSERC | Tier 1 | ECE |
| Canada Research Chair in Nano- and Micro-Structured Electromagnetic Materials and Applications | George Eleftheriades | NSERC | Tier 1 | ECE |
| Canada Research Chair in Signal Processing Systems | Glenn Gulak | NSERC | Tier 1 | ECE |
| Canada Research Chair in Smart and Functional Polymers | Hani Naguib | NSERC | Tier 2 | MIE |
| Canada Research Chair in Quantum Information | Hoi-Kwong Lo | NSERC | Tier 2 | ECE |
| Canada Research Chair in Multi-disciplinary Optimization | Joaquim Martins | NSERC | Tier 2 | UTIAS |
| Canada Research Chair in Photonic Technologies and Applications | Li Qian | NSERC | Tier 2 | ECE |
| Canada Research Chair in Tissue Engineering | Molly Shoichet | NSERC | Tier 1 | ChemE |
| Canada Research Chair in Fuel Cell Materials and Manufacturing | Olivera Kesler | NSERC | Tier 2 | MIE |
| Canada Research Chair in Internet Video, Audio, and Image Search | Parham Aarabi | NSERC | Tier 2 | ECE |
| Canada Research Chair in Stem Cell Bioengineering | Peter Zandstra | NSERC | Tier 2 | IBBME |
| Canada Research Chair in Autonomous Space Robotics | Tim Barfoot | NSERC | Tier 2 | UTIAS |
| Canada Research Chair of Biotechnology | Warren Chan | NSERC | Tier 2 | IBBME |
| Canada Research Chair in Digital Communications | Wei Yu | NSERC | Tier 2 | ECE |
| Canada Research Chair in Stem Cell Bioengineering and Functional Genomics | William Stanford | CIHR | Tier 2 | IBBME |
| Canada Research Chair in Micro and Nano Engineering Systems | Yu Sun | NSERC | Tier 2 | MIE |
| Celestica Chair in Materials for Microelectronics | Doug Perovic | Endowed | | MSE |
| Chair in Computer Networks and Enterprise Innovation | Elvino Sousa | Endowed | | ECE |

| | | | |
|---|---|---|---|
| Chair in Information Engineering | Joseph Paradi | Endowed | ChemE |
| Chair in Software Engineering | Tarek Abdelrahman | Endowed | ECE |
| Clarice Chalmers Chair of Engineering Design | William Cleghorn | Endowed | MIE |
| Dusan and Anne Miklas Chair in Engineering Design | Paul Chow | Endowed | ECE |
| Edward S. Rogers Sr. Chair in Engineering | Glenn Gulak | Endowed | ECE |
| Eugene V. Polistuk Chair in Electromagnetic Design | Doug Lavers | Endowed | ECE |
| Frank Dottori Chair in Pulp and Paper Engineering | Honghi Tran | Endowed | ChemE |
| Heffernan Chair in Materials Processing | Torstein Utigard | Endowed | MSE |
| Industrial Research Chair in Design Engineering for the Urban Environment | Paul Gauvreau | NSERC | CivE |
| Industrial Research Chair in Drinking Water Research | Robert Andrews | NSERC | CivE |
| Industrial Research Chair in Durable and Sustainable Concrete | Doug Hooton | NSERC | CivE |
| Industrial Research Chair in Nano-engineering of Alloys for Nuclear Power Systems | Roger Newman | NSERC/ UNENE | ChemE |
| J. Armand Bombardier Chair in Aerospace Flight | David Zingg | Endowed | UTIAS |
| L. Lau Chair in Electrical and Computer Engineering | Reza Iravani | Endowed | ECE |
| Michael E. Charles Chair in Chemical Engineering | Michael Sefton | Endowed | ChemE |
| Nortel Institute Chair in Emerging Technology | J. Stewart Aitchison | Endowed | ECE |
| Nortel Institute Chair in Network Architecture and Services | Jörg Liebeherr | Endowed | ECE |
| Pierre Lassonde Chair in Mining Engineering | William Bawden | Endowed | CivE |
| Robert M. Smith Chair in Geotechnical Mine Design and Analysis | John Curran | Endowed | CivE |
| Stanley Ho Professorship | Sorin Voinigescu | Endowed | ECE |
| The Stanley L. Meek Chair in Advanced Nanotechnology | Harry Ruda | Endowed | MSE |
| University of Toronto Distinguished Professor in Plasma Engineering | Javad Mostaghimi | U of T | MIE |
| Velma M. Rogers Graham Chair in Engineering | George Eleftheriades | Endowed | ECE |
| Wallace G. Chalmers Chair of Engineering Design | Li Shu | Endowed | MIE |
| W. M. Keck Chair of Seismology and Rock Mechanics | Paul Young | Endowed | CivE |

**Note:**

**Canada Research Chair**
Established by the Government of Canada to attract and retain some of the world's most outstanding researchers in Canadian degree-granting institutions. The program invests a total of $300 million per year across the country. There are two types of CRCs: Tier 1, which is renewable and held for seven years. The University receives $200,000 annually per Tier 1 Chair; Tier 2 is a junior chair, held for five years and is eligible for renewal only once, unlike the Tier 1 level. The University receives $100,000 annually for Tier 2 CRCs.

**Endowed Research Chair**
Created with the generous support of donations and indicates a broad and continuing commitment to the position and discipline of research. Each Faculty member who holds a Chair position is considered to be of great distinction and typically at the rank of Professor with tenure. Each Chair position is held for a fixed term.

**Industrial Research Chair**
Jointly funded by NSERC and industry to help universities build on existing strengths or develop major research capacity in areas of interest to industry.

**U of T Distinguished Professor**
Designed to advance and recognize faculty with highly distinguished accomplishments who display promise. This Chair is limited to no more than 3% of tenured faculty in a Faculty.

# 7. Multidisciplinary Education and Research

U of T Engineering has a long tradition of collaborative scholarship that enhances the student experience and promotes research excellence. The breadth and depth of our programs, centres, and institutes provides an extraordinary range of opportunities for multidisciplinary research and teaching.

The Faculty has introduced a number of Faculty-wide initiatives in the past few years. In 2009–2010, we initiated two new cross-disciplinary undergraduate Minors to complement the new Energy Systems Engineering Major in the Engineering Science program that was launched in fall 2008. Graduate students actively contribute to the Faculty's multidisciplinary research and can specialize in one of two graduate certificates to further enrich their educational experience.

Collaborative and multidisciplinary educational and research programs are becoming a fundamental part of the Engineering Faculty, and the Faculty continues to expand its offerings. In 2008–2009, we created two new initiatives: the Centre for Global Engineering; and the Identity, Privacy and Security Institute.

In May 2009, the Faculty established two new Extra-Departmental Units (EDU) that will advance and administer new curricular and co-curricular activities to further strengthen our research and educational offerings.

The Centre for Global Engineering (CGEN) and the Identity, Privacy and Security Institute (IPSI) were created as EDU:C and a Cross-Disciplinary Programs Office was also created.

## Identity, Privacy and Security Institute

### Background

In the spring of 2007, ECE Professor Dimitrios Hatzinakos and colleagues from the Faculty of Information and U of T Mississauga created a new initiative at U of T focusing on identity, privacy and security. This initiative was established to carry out a pioneering, interdisciplinary program of research, education, outreach, industry collaboration and technology transfer with emphasis on technology, policy and science. In May 2009, IPSI became an EDU-C and became the Identity, Privacy and Security Institute.

### Objectives

- To advance the integration of the basic, social and engineering science research required to generate sustainable solutions to identity, integrity, privacy and security.
- To assemble a cross-disciplinary community of researchers and community partners to create excellence in interdisciplinary research and education in the field of identity, privacy and security technologies, policies and sciences.
- To provide interdisciplinary high level training in identity, privacy and security applications through state of the art educational programs and specializations that will bring together faculty and students from different disciplines to study and think together about identity, privacy and security and related technologies, policies and sciences.
- To facilitate the commercialization of technologies through effective technology transfer mechanisms and industrial partnerships.
- To work with policymakers and regulatory agencies to inform their judgment of identity, privacy and security realities with evidence-based considerations of the scientific, ethical, legal and social issues involved.

### Director

Dimitrios Hatzinakos

## Centre for Global Engineering

### Background

In the first half of 2008, the Dean's Task Force on Globalization and Engineering recommended exploring the creation of a centre to focus the Faculty's activities on global engineering issues. A working group consisting of Phil Byer, Yu-Ling Cheng, Bryan Karney and Murray Metcalfe was established to explore the concept of a centre.

### Objectives

- CGEN will play a key role in both the education and research mission of the Faculty by promoting interdepartmental and interdivisional research and other scholarly activities related to engineering in a global environment.
- CGEN's activities will be carried out by existing faculty, working with internal and external partners.
- CGEN members will conduct research that is either: (1) discipline specific research projects with relevance to global issues, and/or (2) research in knowledge translation or diffusion of innovation in the engineering context.
- CGEN will help to enhance the global experience of students.
- Faculty affiliated with CGEN will contribute to the education mission by: teaching courses, supervising design projects or undergraduate and graduate theses with international content, participating in the development of academic initiatives including undergraduate minors and graduate certificate programs, and serving as links to Departments outside the Faculty who may be beneficial partners in the Faculty's global programs.
- CGEN will be the face of global engineering to both internal and external communities and will identify to potential external partners that research and educational activities on global issues exists within the Faculty, and will thus lead to collaborative opportunities.

### Director

Yu-Ling Cheng

## Cross-Disciplinary Programs Office

### Background

The Faculty has introduced a number of Faculty-wide educational initiatives in the past few years. The new Cross-Disciplinary Programs Office will provide leadership, administration and initiation of Faculty-wide programs, effective July 1, 2009.

### Objectives

This Office will focus on inter- and cross-disciplinary programs available to Engineering undergraduate students, in addition to some graduate programs. Programs administered by this Cross-Disciplinary Programs Office are available to all students in Engineering, subject to approval from their home Department/Division, and does not include Engineering Science Majors.

Programs to be administered by this Office include:

- Bioengineering Minor
- Environmental Engineering Minor
- Sustainable Energy Minor
- Certificate Program in Entrepreneurship
- Certificate Program in Preventive Engineering and Social Development
- Collaborative Graduate Program in Environmental Engineering
- Future curricular certificates/minors

Specific responsibilities of the Office include:

- Provide a "one stop shop" for students to learn about Engineering's interdisciplinary programs.
- Communicate the availability of cross-disciplinary programs to students, faculty, the University and the general public.
- Administer regulations; provide student academic guidance/advising.
- Verify completion of requirements for the awarding of certificates/minors.
- Be the voice for these programs within our Faculty (e.g. Curriculum Committee, Executive Committee, Registrar's Office, Departmental Offices).

### Associate Dean

Bryan Karney

**Note:** Co-curricular "certificates" (e.g. Engineering Leaders of Tomorrow) that do not directly involve courses in our curriculum would not normally be the responsibility of this Office. However, this Office will be knowledgeable of such activities so as to provide the most complete information for our students. Graduate programs such as MEng/ELITE, MEng/EPP, Prospective Professors in Training (PPIT) and the Jeffrey Skoll joint Engineering-MBA program will continue to be the responsibility of the Vice-Dean Graduate Studies.

# 8. Diversity

The University of Toronto values and promotes diversity as an institutional priority and was recognized as one of Canada's Best Diversity Employers in 2009.

The Faculty of Applied Science and Engineering embraces diversity as a marker of excellence. Our vibrant combination of linguistic, cultural, and geographic backgrounds helps foster an inclusive and enriching academic community.

Our collective efforts to promote diversity in recent years have produced several dramatic improvements. The proportion of international students in our First Year undergraduate population increased to 18.9% this year, up from 5.1% in 2003.

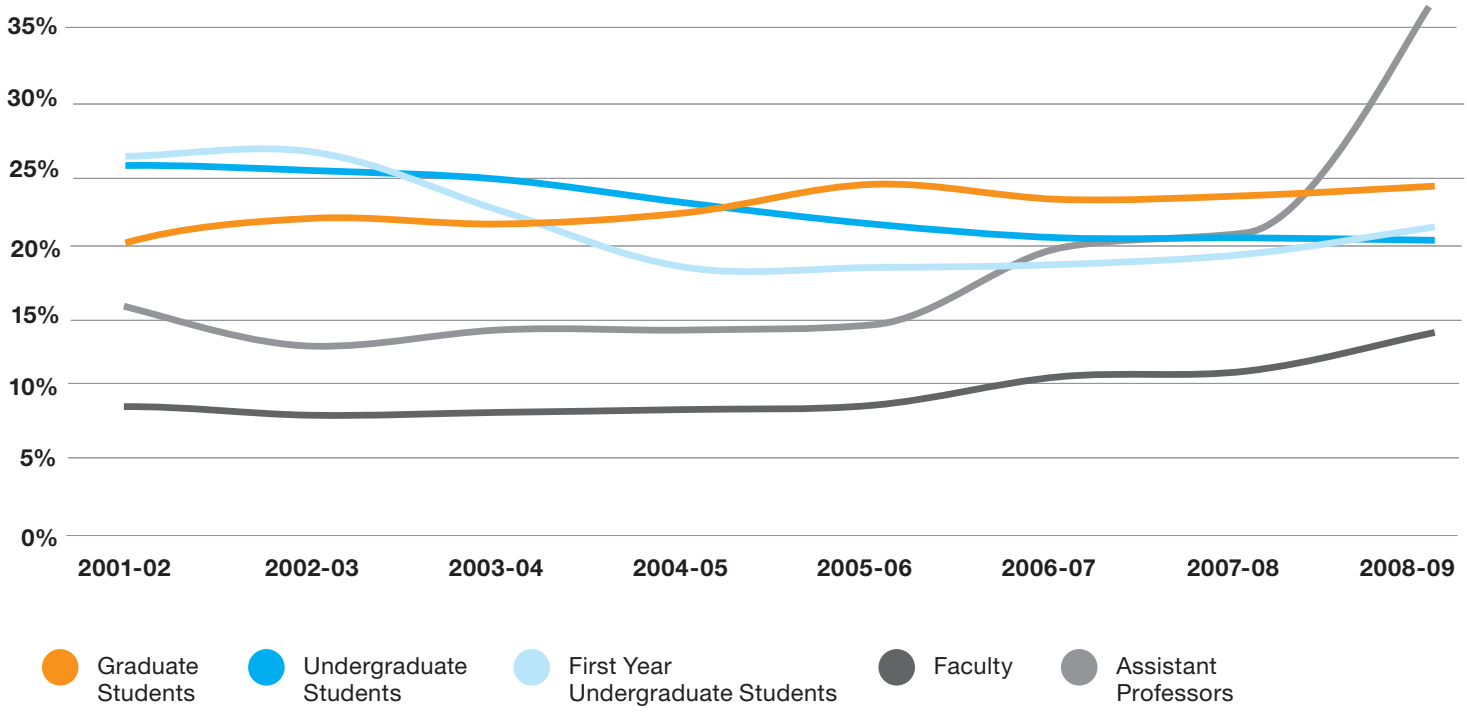
The Faculty has also increased its efforts to attract more female undergraduates. We organize and participate in recruitment efforts designed for women, we sponsor special female mentorship programs, and we have raised the profile of female role models among our faculty.

These efforts are being rewarded. There is a slight upward trend again this year in the number of First Year undergraduate women in Engineering, while the number of women pursuing graduate studies remains steady. In both categories we outperform our peers in Ontario and Canada.

Equally importantly, we have increased the number of women on the faculty. Last year, the number of women assistant professors grew to 37% of our faculty complement, a three-fold increase over three years. Overall, our total proportion of female faculty is slightly higher than the average in both Ontario and Canadian Engineering Faculties.

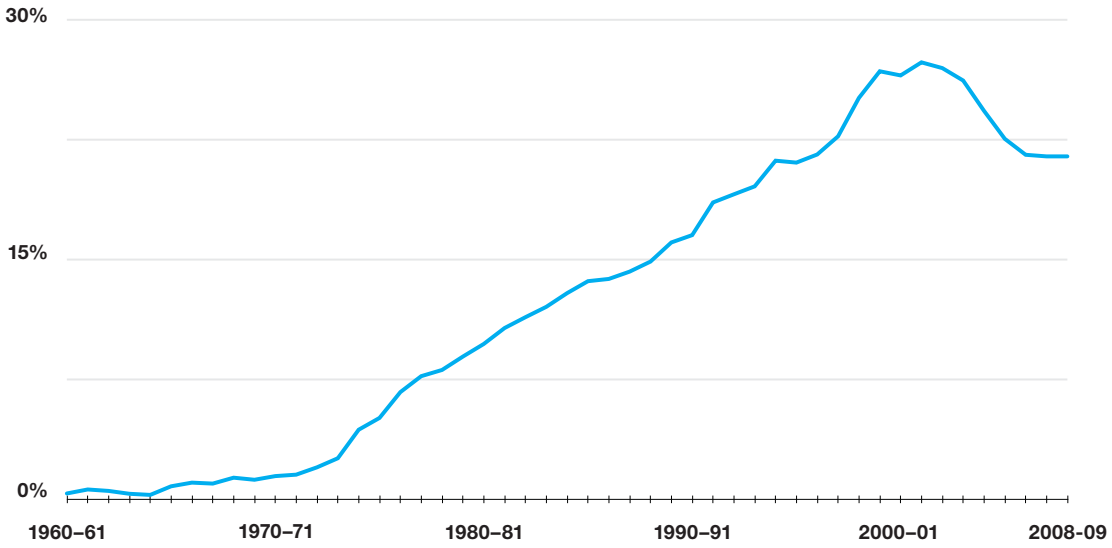
Our female faculty are inspiring role models, recognized with numerous prestigious awards, such as the Killam Research Fellowship, MIT's Top 35 Under 35, and the 3M National Teaching Fellowship. On top of this, a growing number of women are assuming academic leadership roles within the Faculty.

## Figure 8.1
## Percentage of Women Graduate Students, Undergraduate Students, First Year Students, and Faculty in Engineering 2000–2001 to 2008–2009



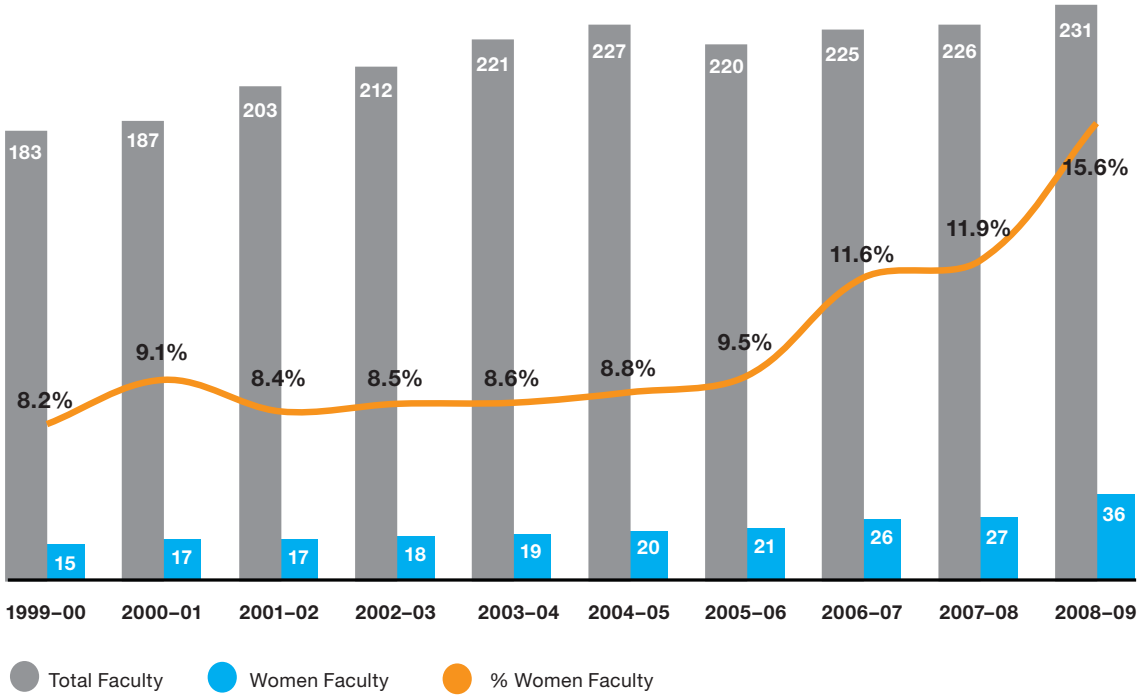

| | 2001–02 | 2002–03 | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|---|---|---|---|---|
| Graduate Students | 20.1% | 22.6% | 23.6% | 23.7% | 25.2% | 25.0% | 24.9% | 25.5% |
| First Year Undergrad Students | 26.9% | 27.2% | 23.7% | 20.3% | 20.3% | 20.4% | 21.2% | 22.8% |
| Undergraduate Students | 26.3% | 27.2% | 26.4% | 24.5% | 22.8% | 21.6% | 21.2% | 21.3% |
| Assistant Professors | 15.2% | 12.2% | 12.5% | 12.7% | 16.4% | 21.3% | 22.2% | 37.0% |
| Faculty | 8.4% | 8.5% | 8.6% | 8.8% | 9.5% | 11.6% | 11.9% | 15.6% |

## Figure 8.2
## Undergraduate Women in Engineering 1960–1961 to 2008–2009



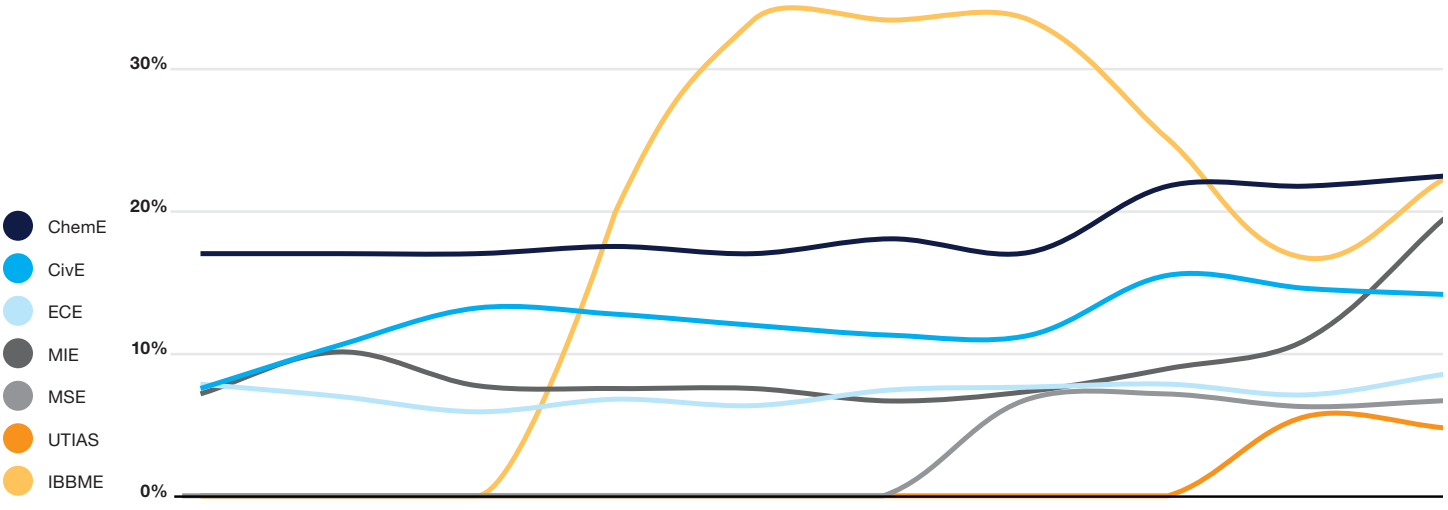

This chart shows the enrolment of undergraduate women in Engineering from 1960–1961 with 0.35% women undergraduate students. This past academic year, 21.3% of our undergraduate students were women. Undergraduate enrolment of women peaked in 2001, and is again increasing with 22.8% in the 2008–2009 First Year class.

## Figure 8.3
## Number of Men and Women Faculty with Percentage of Women Faculty 1999–2000 to 2008–2009




In 2008–2009, women accounted for 37.0% of Assistant Professors, 13.8% of Associate Professors, 4.8% of Professors, and 27.3% of Lecturers within the Faculty. For a detailed analysis on the faculty composition of each academic area, please see the Appendix.

## Figure 8.4
## Percentage of Women Faculty by Academic Area 1999–2000 to 2008–2009




| | 1999–00 | 2000–01 | 2001–02 | 2002–03 | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|---|---|---|---|---|---|---|
| **ChemE** | 17.1% | 17.1% | 17.1% | 17.6% | 17.1% | 18.2% | 17.2% | 21.9% | 21.9% | 22.6% |
| **CivE** | 7.7% | 10.7% | 13.3% | 12.9% | 12.1% | 11.4% | 11.4% | 15.6% | 14.7% | 14.7% |
| **ECE** | 8.0% | 7.1% | 6.1% | 6.9% | 6.5% | 7.6% | 7.8% | 8.0% | 7.2% | 8.7% |
| **MIE** | 7.3% | 10.3% | 7.9% | 7.7% | 7.7% | 6.8% | 7.5% | 9.1% | 11.1% | 20.0% |
| **MSE** | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.7% | 7.1% | 6.3% | 7.1% |
| **UTIAS** | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.6% | 5.9% |
| **IBBME** | 0.0% | 0.0% | 0.0% | 20.0% | 33.3% | 33.3% | 33.3% | 25.0% | 16.7% | 22.2% |
| **Faculty** | 8.2% | 9.1% | 8.4% | 8.5% | 8.6% | 8.8% | 9.5% | 11.6% | 11.9% | 15.6% |

## Figure 8.5a
## Women Holding Academic Administrative Faculty Roles 2000–2009

| Year | Name | Title | Area |
|---|---|---|---|
| 2000–2005 | Yu-Ling Cheng | Chair | EngSci |
| 2006–present | Cristina Amon | Dean | Faculty |
| 2006–2007 | Brenda McCabe | Vice-Dean, Graduate Studies | Faculty |
| 2006–present | Susan McCahan | Chair, First Year | Faculty |
| 2007–present | Yu-Ling Cheng | Speaker, Faculty Council | Faculty |
| 2008–present | Brenda McCabe | Chair | CivE |
| 2009–present | Jean Zu | Chair | MIE |

The figures on this page illustrate the increase of women in major academic administrative roles over time within the Faculty of Applied Science and Engineering. From 2000 to 2005, one woman, Yu-Ling Cheng, held an academic administrative role. Starting in 2006, women participation in major leadership roles has increased. Currently 31.3% of our Faculty leaders are women.

## Figure 8.5b
## Academic Administrative Faculty Roles and Percentage of Women 2000–2009

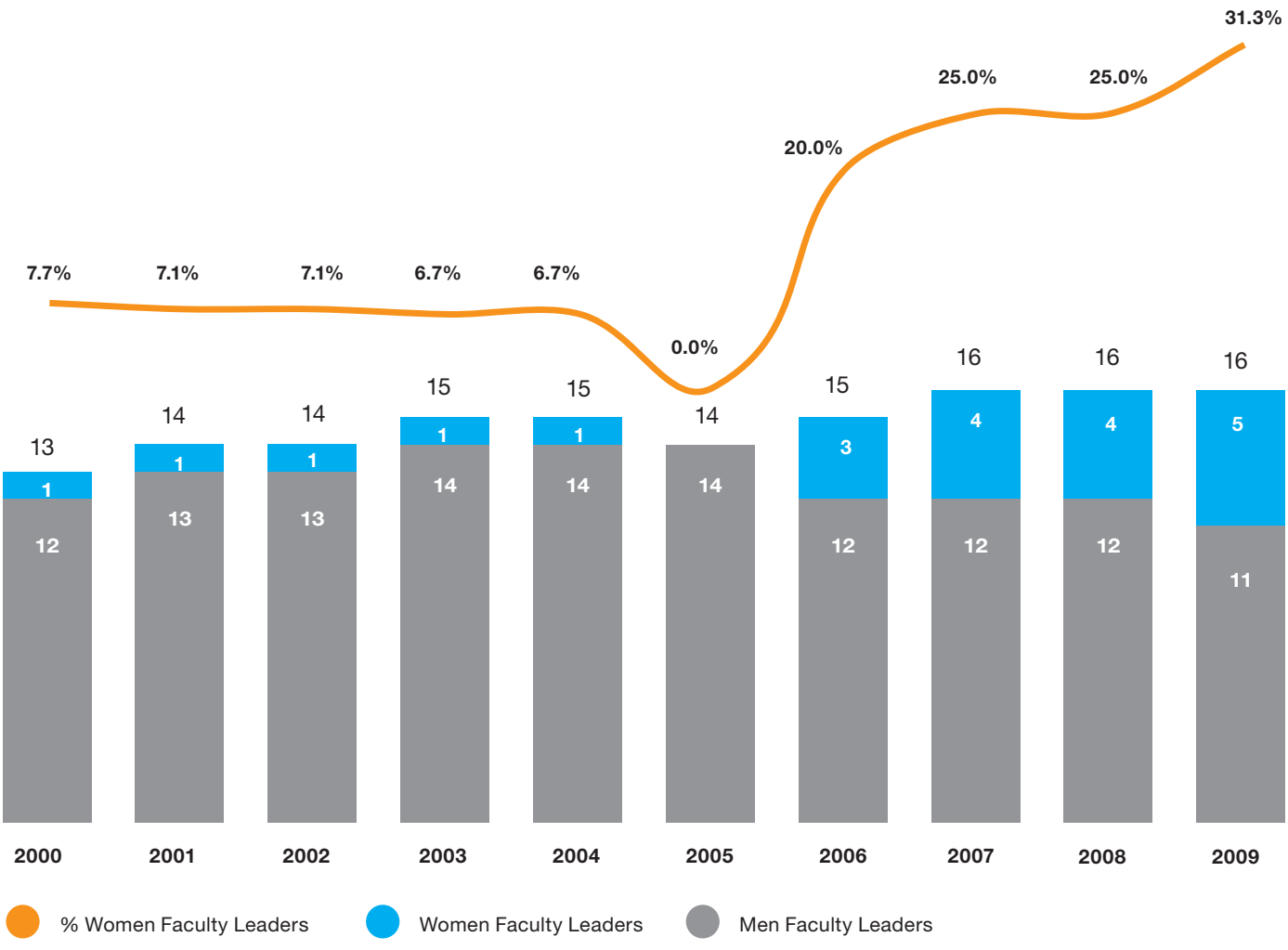
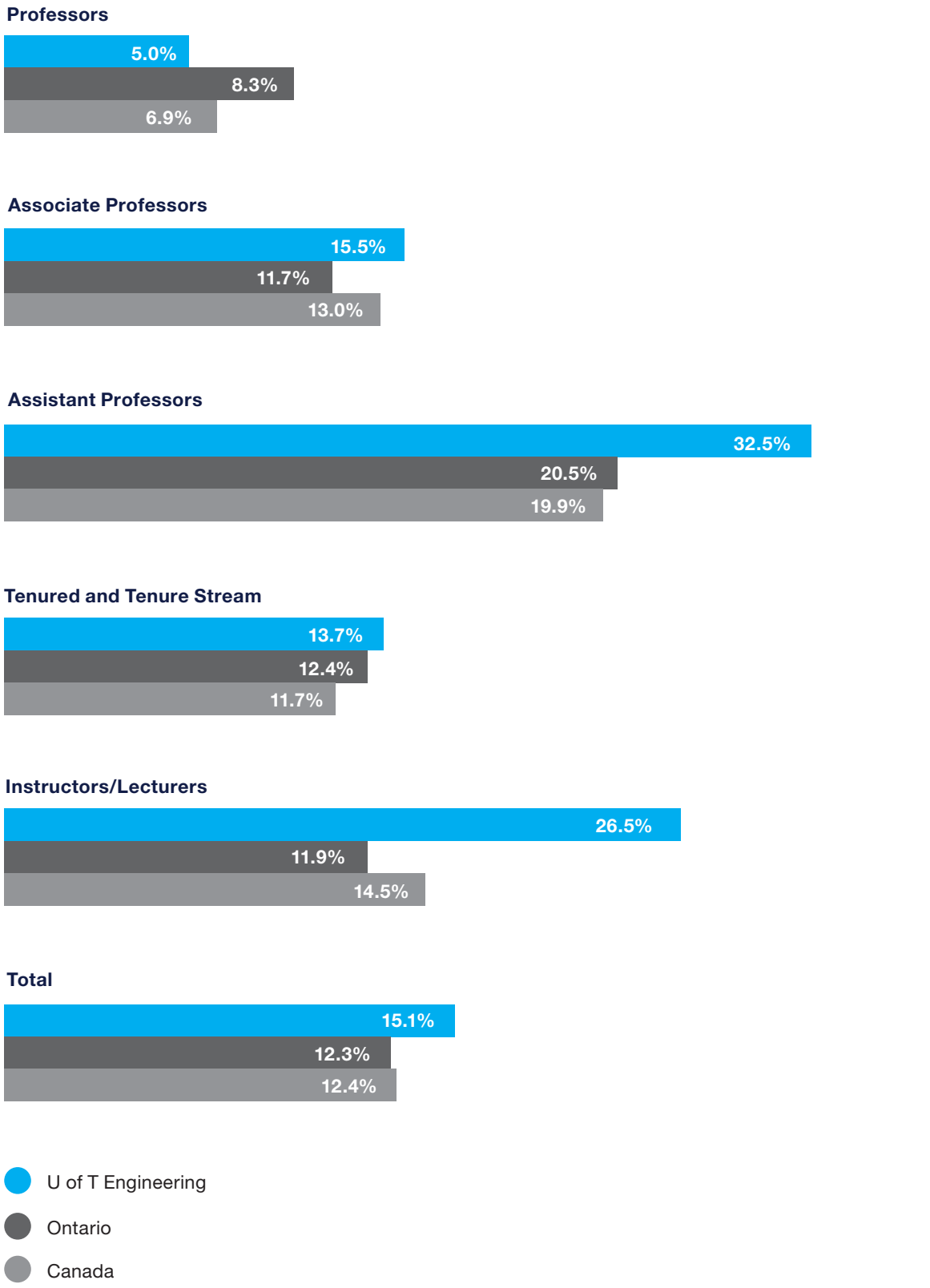


Figure 8.6
## Percentage of Women Faculty at U of T Engineering Compared with Women Faculty in Ontario and Canadian Engineering Faculties
## 2008



# 9. Globalization

Engineers play a fundamental role in advancing a country's economic growth and improving the quality of life for its citizens. Increasingly, this role transcends national boundaries. Globalization trends highlight how engineering and technology can influence the course of human development around the globe.

Today, the world's population is linked across geographic space as never before – disparate populations live in similar environments and climates, use the same energy resources, and share interlinked economies and sociopolitical systems. Recognizing that globalization brings new challenges as well as new opportunities, the Faculty is developing an educational paradigm that will prepare graduates to work across cultures and disciplines. We are educating the next generation of engineers to meet the unparalleled possibilities, responsibilities, and challenges they will face in the future.

This past year, the Faculty created Canada's first Centre for Global Engineering (CGEN), led by Professor Yu-Ling Cheng as Director, and we appointed Dr. Murray Metcalfe as Professor, Globalization. CGEN will serve as the focal point to showcase, invigorate and expand our globalization activities. The Centre will engage the resources of our alumni and faculty, who continue to be invaluable in advancing Canada's innovation agenda and in collaborating with other institutions and individuals – both nationally and internationally – on our shared goals.

## Task Force on Globalization and Engineering

A decanal Task Force on Globalization and Engineering was established in January 2008 to explore how Engineering at U of T could better prepare graduates for a global workplace and how our research initiatives should be influenced by and proactively address global challenges. The Task Force concluded that globalization is a reality that needs to be addressed in our educational and research initiatives, and identified the following key dimensions of globalization relevant to the work of this Faculty: competitiveness/collaboration; sustainability; and international development. Our graduates will collaborate and compete with engineers from around the world, and engineers should engage with the world's most urgent problems including poverty, hunger, environment and energy. For the full report, please see: www.enews.engineering.utoronto.ca/_Volume3/Issue2/Issue2.html

## Academic Initiatives

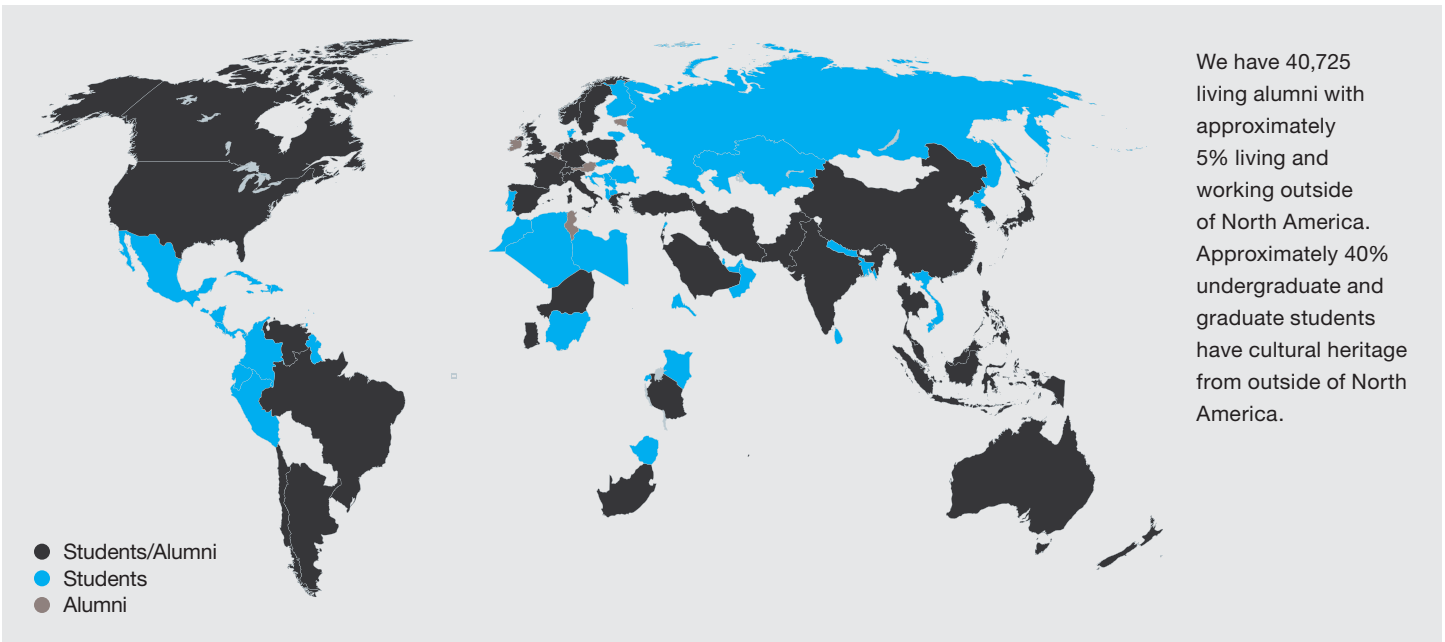
Based on the recommendations of the Task Force, the following academic initiatives are in development:

- Creation of a Minor in Global Engineering.
- Introduction of a course for Spring 2010: Technology, Engineering and International Development.
- Planning for a graduate certificate program in Global Engineering.
- Ongoing collaborations to infuse a global perspective into existing courses.
- Working with major international Engineering and Technical Universities (National University of Singapore, Tsinghua University in China, Monterrey Institute of Technology in Mexico, KAIST [Korea Advanced Institute of Science and Technology], IIT Kanpur, India) to provide meaningful exchange opportunities for our students, in addition to opportunities available in 130 universities in 40 countries through the U of T student exchange program: www.utoronto.ca/student.exchange

The following academic initiatives have been completed:

- Created Centre for Global Engineering (CGEN).
- Appointed Dr. Murray Metcalfe, MIE 7T7, to the position of Professor, Globalization.
- Introduced Spring 2009 course: Global Energy Systems.
- Implemented a Seminar Series on Engineering Globalization with a variety of topics at the intersection of technology and globalization, with renowned speakers from MIT and U of T. CGEN will continue to recruit top global leaders for the speaker series each semester.
- Appointed Yu-Ling Cheng Director, CGEN.

**Figure 9.1**
**Cultural Heritage of Current Students and World Distribution of Alumni 2008–2009**




We have 40,725 living alumni with approximately 5% living and working outside of North America. Approximately 40% undergraduate and graduate students have cultural heritage from outside of North America.

# 10. Finances

The Faculty's revenue is derived primarily from tuition fees and government grants received for undergraduate and graduate students. A smaller portion flows from endowed expendable earnings, Canada Research Chair funding, federal and provincial support to cover the institutional costs associated with conducting sponsored research (ICR coverage), and from the return on short-term investments. Revenue is split between the Faculty and the University, with roughly half used to cover the Faculty's attributed central costs. Some of the Faculty's contribution to the University is returned to the Faculty through the University Fund.

Ultimately, the Faculty's Operating Budget is a combination of net revenue, University Fund allocation, and divisional income – for a total of $80.9 million in 2008–2009.

Within the Faculty, we categorize our revenue sources as either "restricted" or "unrestricted". Restricted revenues are those generated from endowed expendable earnings, student aid and scholarships, Canada Research Chair grants, and ICR coverage. This type of revenue is reserved for specific uses, as prescribed by policy arrangements and contractual obligations. By contrast, unrestricted revenues are those generated from tuition fees, government grant funding, interest from short-term investments, and other income such as application fees. Unrestricted revenue may be used by the Faculty to meet its general operating needs.

To ensure we are able to continue advancing our critical priorities and build upon our successes in the future, we have strengthened our finances and will deploy a new internal budget model. The new budget model is guided by transparency, incentives for increasing revenues and reducing costs, and minimal increase in record-keeping.

This shows the total revenue earned by the Faculty and the associated central costs attributed to the Faculty for the last three budget years, corresponding to the implementation of the University's new budget model. The table summarizes these figures and shows the resultant net revenue available to the Faculty each year. Also shown is the amount of the Faculty's University Fund (UF) allocation over this period. The total Operating Budget of the Faculty is made up of the net revenue, UF allocation, plus divisional income derived from local activities such as privatized MEng programs.

**Figure 10.1**
**Total Revenue**
**2006–2007 to 2008–2009**

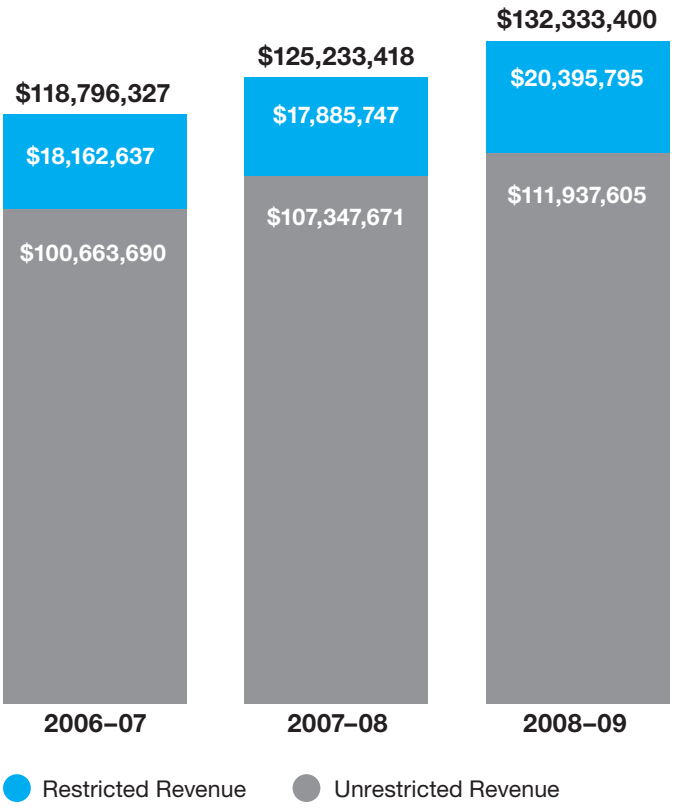



**Figure 10.2**
**Total Central Costs**
**2006–2007 to 2008–2009**

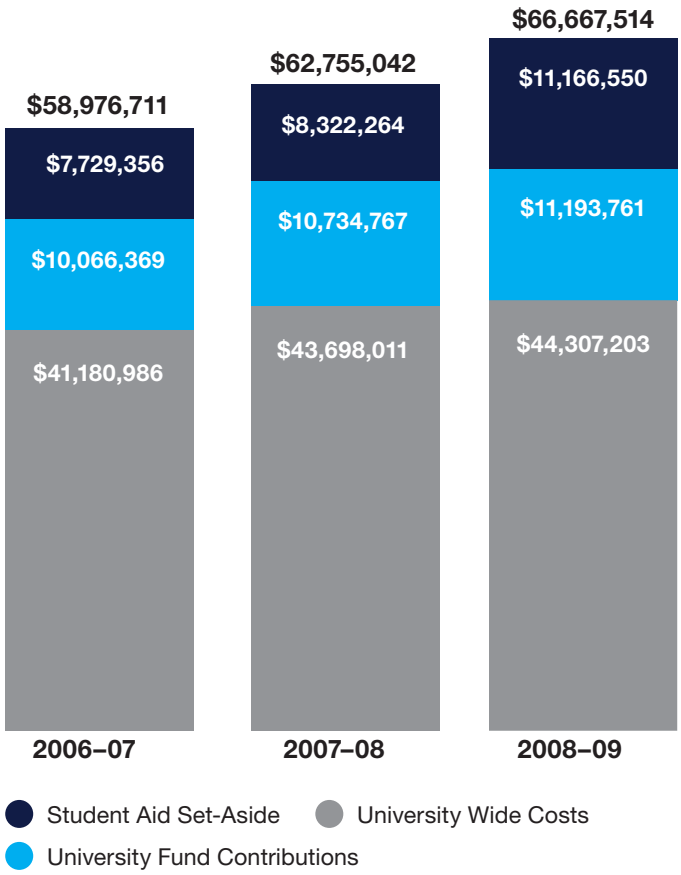



**Figure 10.3**
**Budget Data**
**2006–2007 to 2008–2009**

| | 2006–07 ($) | 2007–08 ($) | 2008–09 ($) |
|---|---|---|---|
| Unrestricted Revenue | 100,663,690 | 107,347,671 | 111,937,605 |
| Restricted Revenue | 18,162,637 | 17,885,747 | 20,395,795 |
| **Total Revenue** | **118,826,327** | **125,233,418** | **132,333,400** |
| University Wide Costs | 41,180,986 | 43,698,011 | 44,307,203 |
| University Fund Contribution | 10,066,369 | 10,734,767 | 11,193,761 |
| Student Aid Levy | 7,729,356 | 8,322,264 | 11,166,550 |
| **Total Central Costs** | **58,976,711** | **62,755,042** | **66,667,514** |
| **Net Revenue** | **59,849,616** | **62,478,376** | **65,665,886** |

## Budget Overview for 2008–2009 Fiscal Year

The Faculty's revenue sources, attributed central costs, and gross expense budget breakdown are shown for the 2008–2009 fiscal year. Central costs are comprised of a levy to raise funding for student aid; a 10% tax of unrestricted revenues to create a University Fund for redistribution; and the operating costs of the University. These University-Wide Costs are divided into 12 cost bins, and attributed to the academic divisions based on several metrics. The 12 cost bins are: Occupancy, Information Technology, University Management, Financial Management, Human Resources, Pension Debt Amortization, University Advancement, Library, Research Administration, Student Recruitment & Registrarial Services, University-Wide Academic Expenses, and University-Wide General Expenses.

**Figure 10.4**
**Revenue Sources**
**2008–2009**

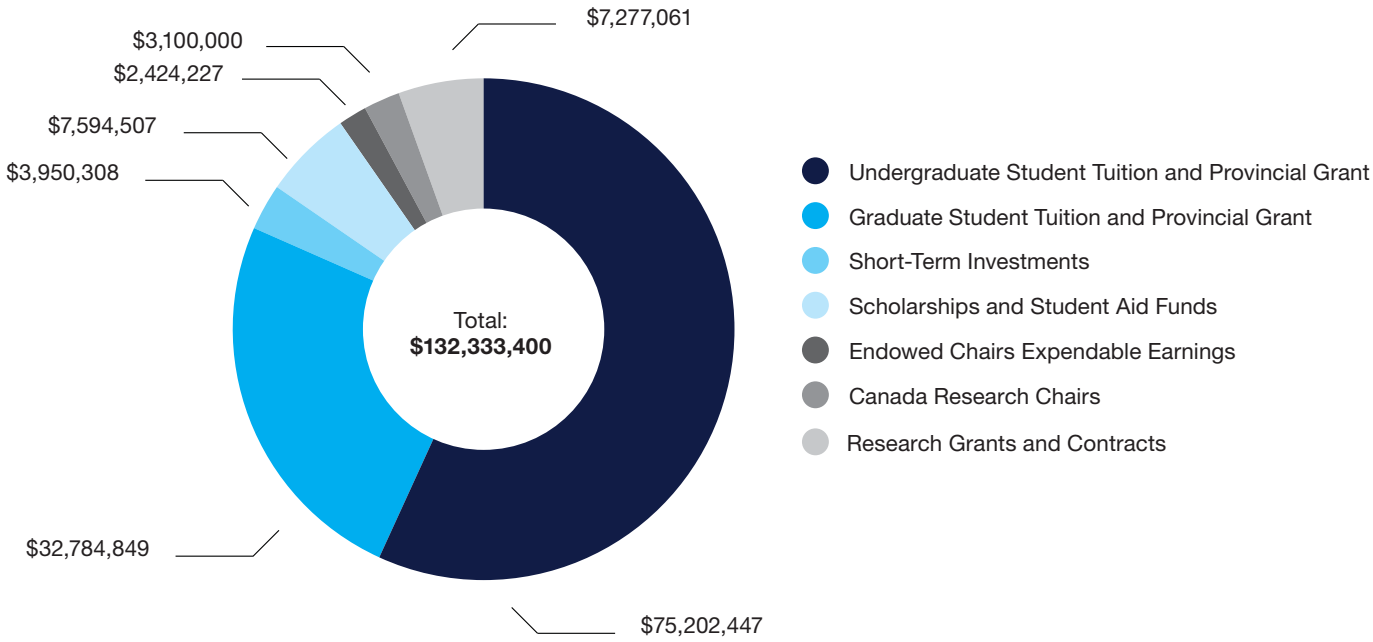



**Figure 10.5**
**Revenue Distribution**
**2008–2009**

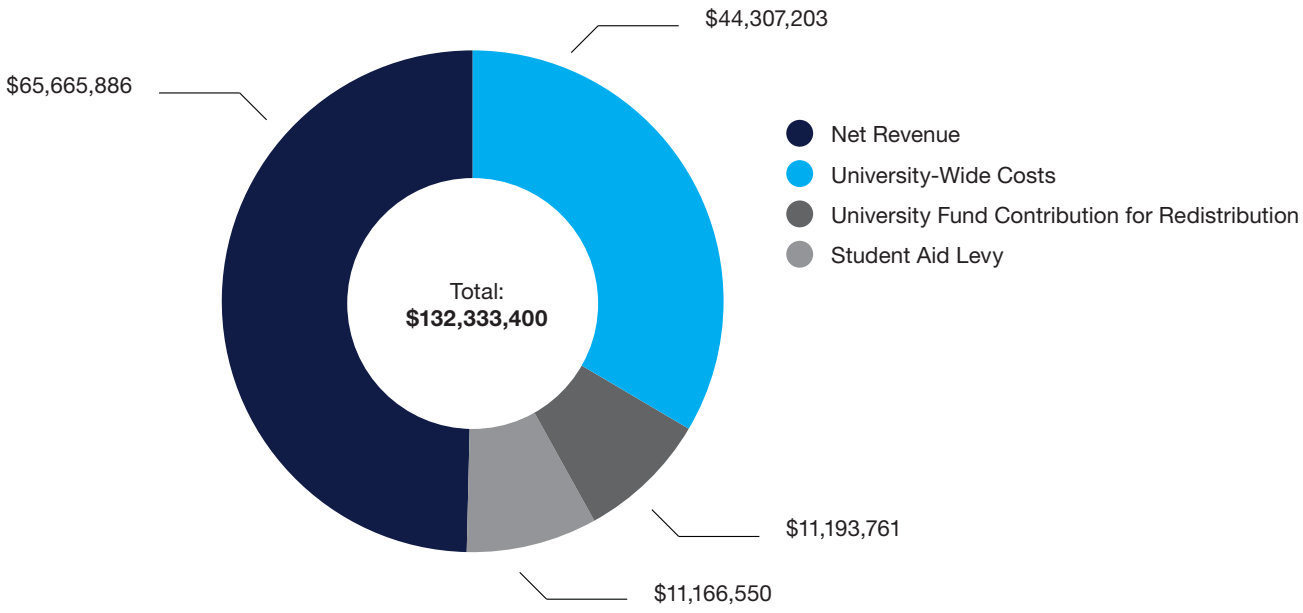
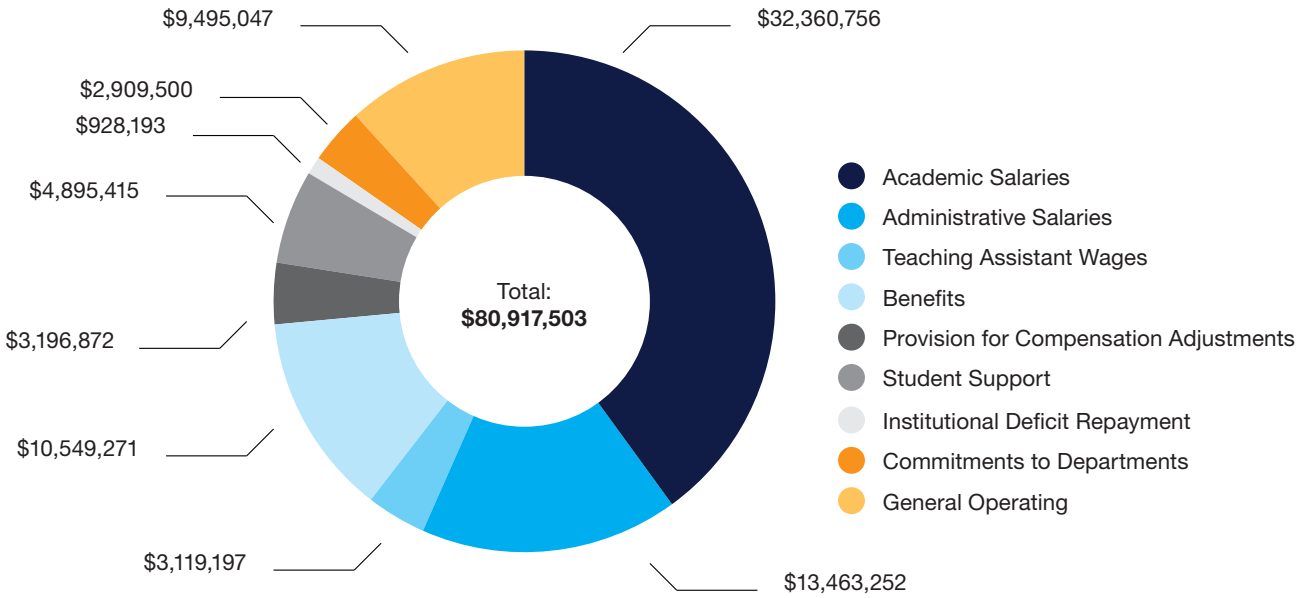


**Figure 10.6**
**Operating Budget Breakdown 2008–2009**




## University and Faculty Budget Models

In 2006–2007, the University changed its budget allocation process to a responsibility-centred model, in which all revenue attributable to an academic division is credited to that division and all costs similarly assigned. To ensure a smooth transition, budgets old and new were equated during that year using a fund of 10% of revenues known as the "University Fund" specially created for this purpose. Going forward, as the bulk of an academic division's budget changes with actual revenues earned and costs assigned, this nominal 10% allocation from the University Fund remains constant (as set in 2006–2007) and acts as a damper to large swings in revenue for the division.

In consultation with the Chairs and Directors, the Faculty has developed a new internal budget allocation process based on that of the University, with revenues and some central costs (e.g. occupancy, research administration, and advancement) passed down directly to the Departments and Institutes. We plan to use 2008–2009 as our year to equate old to new budgets, and we plan to employ a Faculty Fund mechanism similar to the University Fund. Further, we will create a Strategic Fund through which we can allocate, via an annual process of assessment, additional funding in support of academic priorities. Our new internal budget model will be introduced in 2010–2011.

# 11. Physical Infrastructure

The Faculty of Applied Science and Engineering's commitment to excellence in pedagogy and research is critically dependent upon a superbly built environment and the physical infrastructure that accompanies it. In this respect, the Faculty has relied on a long tradition of world-class facilities – even as we pursue funding opportunities with the government and our generous benefactors for deferred maintenance and new construction. Our success in these endeavours has seen a transformation in the Engineering Precinct with ambitious plans for the future.

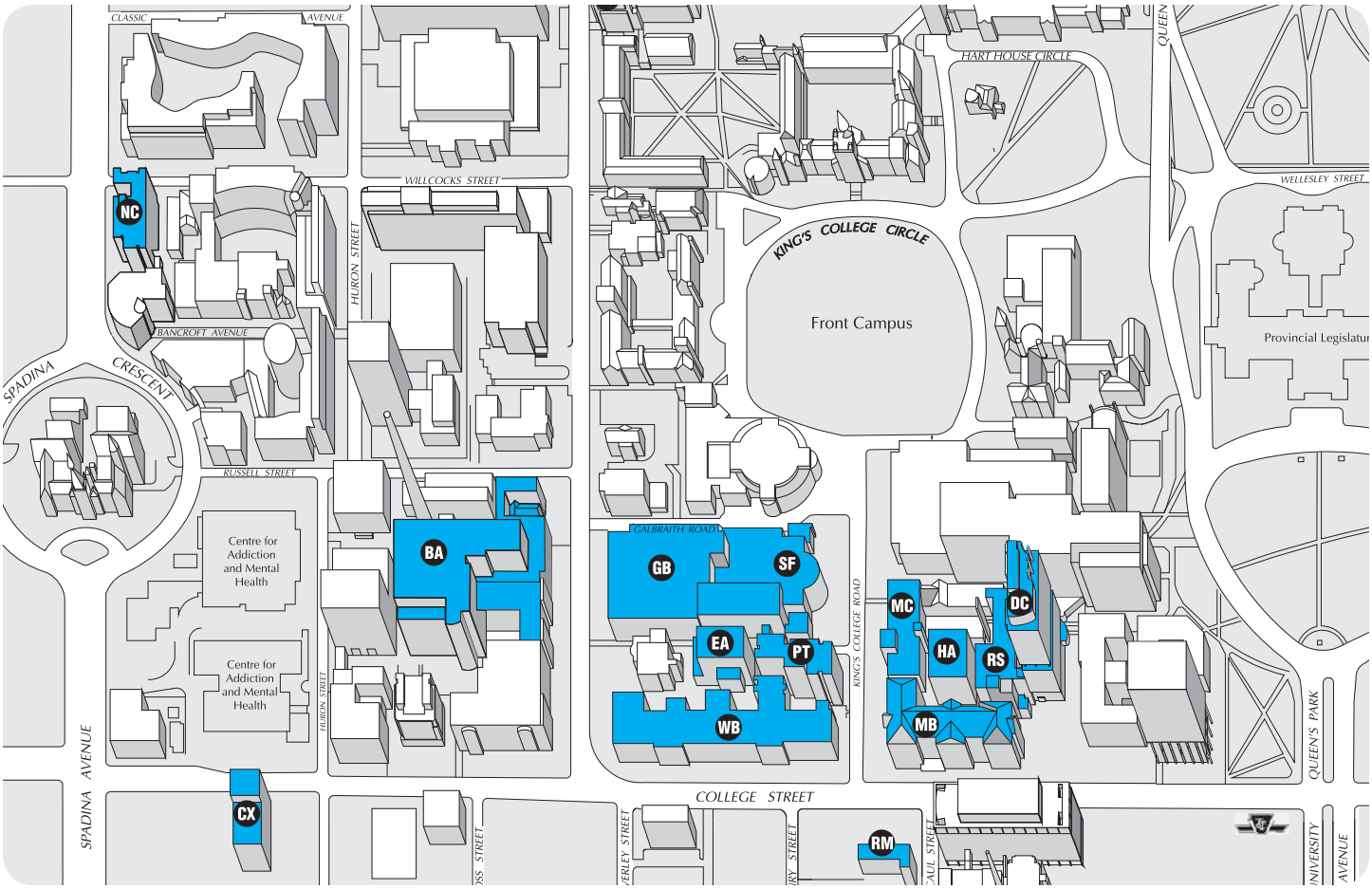
Nevertheless, a comprehensive Divisional Space Review undertaken for the Faculty in 2008–2009, determined that our current physical space no longer meets our needs as a world leader in engineering education and research.

Of the 16 buildings occupied by the Faculty on the St. George campus and in Downsview, less than a third of the total net assignable square metres of space within these buildings was deemed adequate. This difficult state is the product of many factors, but chief among them are the age of our buildings – many were built between 1906 and 1960 – and the fact that most have not seen major upgrades in decades.

Rectifying the situation is an urgent priority for the Faculty. Accordingly, we appointed a Director of Planning and Infrastructure, and several projects are underway or have already been completed to better meet the needs of the students, faculty, and staff at Canada's premier Engineering Faculty – and this subject remains a critical area for philanthropic fundraising and Faculty advocacy, both within the University and beyond.

## Figure 11.1
## Engineering Precinct of the U of T St. George Campus

Below is a map of the buildings on the St. George Campus that form the Engineering Precinct. The majority of the Engineering Precinct resides on the southern-most part of the St. George Campus. Along with UTIAS in Downsview (not pictured below), these 16 buildings house our student, faculty, staff, research and teaching spaces.




**BA** Bahen Centre for Information Technology

**GB** Galbraith Building

**WB** Wallberg Building

**EA** Engineering Annex / Electro-Metallurgy Lab Building (South Side)

**PT** D.L. Pratt Building

**SF** Sandford Fleming Building

**HA** Haultain Building

**DC** Donnelly Centre for Cellular and Biomolecular Research (CCBR)

**RS** Rosebrugh Building

**MB** Mining Building

**MC** Mechanical Engineering Building

**NC** New College

**CX** 245 College Street

**RM** 256 McCaul Street

**—** Aerospace (Downsview)*

**Note:** *The U of T Institute for Aerospace Studies is located at 4925 Dufferin Street, Toronto, not shown above.

## Figure 11.2
## Summary of the Location of Space for all Units within 16 Buildings used by Engineering 2008–2009

The following table summarizes the location of Engineering units within buildings, the amount of space assigned to each unit in each building, and the amount of space in each building not assigned to Engineering. Most units have developed a shared presence in several buildings, notably the Bahen Centre and Sandford Fleming are shared with other Divisions (Arts and Science, Office of Space Management). The gross-to-net ratio is an indication of the spaciousness of a building, with the current standard for new construction aiming for a ratio of approximately 2.0. The vast majority of our buildings are below the desired mark.

| Code | Building | Non Assigned | Other Assigned Non Engineering | Rented | Other Assigned Engineering | Dean's Office | EngSci | UTIAS | ChemE | CivE | ECE | IBBME | MIE | MSE | NASM Assigned To Engineering | Gross Square Metres | Total NASM | Gross/ Net Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | Aerospace | 987 | | | | | | 4,477 | | | | | | | 4,477 | 5,962 | 4,477 | 1.33 |
| EA | Annex | 413 | | | | 324 | | | | | 954 | | | | 1,278 | 1,940 | 1,278 | 1.52 |
| BA | Bahen Centre | 24,553 | 10,030 | | 644 | 845 | 456 | | | | 5,640 | | 1,431 | | 9,016 | 37,261 | 19,046 | 1.96 |
| EA | Electrometal | 4 | | | | | | | | | | | | 149 | 149 | 176 | 149 | 1.18 |
| GB | Galbraith | 4,558 | 1,315 | | 5 | 1,595 | | | | 5,002 | 4,195 | | | | 10,796 | 19,661 | 12,111 | 1.62 |
| HA | Haultain | 741 | 534 | | | 12 | | | 181 | 98 | | | 638 | 720 | 1,649 | 3,466 | 2,183 | 1.59 |
| MC | Mechanical | 2,296 | 546 | | | 63 | | | | | | | 5,497 | | 5,560 | 9,722 | 6,105 | 1.59 |
| MB | Mining | 4,203 | 250 | | | | | | | 602 | | 1,304 | 1,926 | 800 | 4,632 | 11,063 | 4,882 | 2.27 |
| RM | 256 McCaul | 170 | | | | 458 | | | | | | | | | 458 | 628 | 458 | 1.37 |
| PT | Pratt | 1,979 | 1,106 | | | | | | | | 1,341 | | | 1,525 | 2,866 | 6,833 | 3,972 | 1.72 |
| RS | Rosebrugh | 1,404 | 198 | | | | | | | | | 810 | 2,198 | | 3,008 | 5,629 | 3,206 | 1.76 |
| SF | Sandford Fleming | 4,776 | 5,018 | | 187 | 839 | | 698 | | 1,596 | 3,580 | | | | 6,900 | 21,834 | 11,919 | 1.83 |
| WB | Wallberg | 5,215 | 847 | | | 326 | | | 8,057 | | 114 | | | 1,298 | 9,795 | 17,200 | 10,642 | 1.62 |
| DC | CCBR | | | | | | | | 457 | | 174 | 824 | | | 1,455 | 21,314 | 9,899 | 2.15 |
| NC | New College | 367 | 376 | 294 | | 294 | | | | | | | | | 294 | 1,037 | 670 | 1.55 |
| CX | 245 College | | | | | | | | | | | | | | | | | |
| | **Total Area** | **51,666** | **20,220** | **294** | **835** | **4,756** | **456** | **5,175** | **8,695** | **7,298** | **15,998** | **2,937** | **11,691** | **4,492** | **62,333** | **163,726** | **90,997** | **1.80** |
| | | | | | **62,333** | | | | | | | | | | | | | |

## Figure 11.3
## Summary of Space Quality Assessment for Engineering Precinct Buildings 2008–2009

Results from the Divisional Space Review indicate that 28.7% of all space assigned to units is "adequate." The buildings assessed as "adequate" are the Bahen Centre and CCBR. Further, 67.4% of all space assigned to units is considered to "need attention," while 3.9% of all space is considered to be "poor."

| Code | Building | Total Assessed NASM | Space Quality Assessment | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Adequate | | Needs Attention | | Poor | |
| | | | NASM | Total | NASM | Total | NASM | Total |
| — | Aerospace | 4,477.2 | 344.8 | 7.7% | 3,930.0 | 87.8% | 202.4 | 4.5% |
| EA | Engineering Annex | 1,278.0 | 0.0 | 0.0% | 1,278.0 | 100.0% | 0.0 | 0.0% |
| BA | Bahen Centre | 8,407.4 | 8,407.4 | 100.0% | 0.0 | 0.0% | 0.0 | 0.0% |
| EA | Electrometallurgy | 149.0 | 0.0 | 0.0% | 0.0 | 0.0% | 149.0 | 100.0% |
| GB | Galbraith | 10,801.3 | 1,941.0 | 18.0% | 8,820.0 | 81.7% | 40.3 | 0.4% |
| HA | Haultain | 1,649.6 | 130.8 | 7.9% | 1,409.0 | 85.4% | 109.8 | 6.7% |
| MC | Mechanical | 5,564.5 | 842.9 | 15.1% | 4,201.0 | 75.5% | 520.6 | 9.4% |
| MB | Mining | 4,669.2 | 1,124.0 | 24.1% | 3,533.0 | 75.7% | 12.2 | 0.3% |
| RM | 256 McCaul | 458.3 | 0.0 | 0.0% | 458.3 | 100.0% | 0.0 | 0.0% |
| PT | Pratt | 2,719.5 | 1,206.0 | 44.3% | 1,490.0 | 54.8% | 23.5 | 0.9% |
| RS | Rosebrugh | 2,881.8 | 43.8 | 1.5% | 2,831.0 | 98.2% | 7.0 | 0.2% |
| SF | Sandford Fleming | 6,863.2 | 599.5 | 8.7% | 6,071.0 | 88.5% | 192.7 | 2.8% |
| WB | Wallberg | 9,795.0 | 1,449.0 | 14.8% | 7,223.0 | 73.7% | 1,123.0 | 11.5% |
| DC | CCBR | 1,455.0 | 1,455.0 | 100.0% | 0.0 | 0.0% | 0.0 | 0.0% |
| | **Total** | **61,169.0** | **17,544.2** | **28.7%** | **41,244.3** | **67.4%** | **2,380.5** | **3.9%** |

**Note:** There is a slight discrepancy in the total NASMs assigned to Engineering between this and the previous table due to New College (a rented space) not being assessed for quality, and due to the reassignment of space captured during the space quality audit, but not yet transferred to the central University space inventory data bank on which the previous table is based.

## Infrastructure Upgrades Recently Completed or In Progress 2008–2009

- ECE Undergraduate Computer Labs Project
- Rock Fracture Dynamics Facility
- UTIAS Various Lab Renovations
- Engineering Library Improvements
- MIE Design Labs – Undergraduate Design Facilities (UDF)
- MIE Fuel Cell Materials and Manufacturing Lab
- MIE Microfluidic Transport Phenomena and Bio-chips Lab
- CivE Structural Lab
- CivE Graduate Student Offices
- ChemE BioZone Phase I
- ECE Graduate Student Office Improvements
- ECF Computer Lab Relocation
- Emerging Communications Technology Institute E-beam
- PEY & ECC Relocation
- Student Club Space
- BA Atrium "Celebrating Engineering Educators" Recognition Wall
- Mechanical Engineering Building LCD Directory
- ECE Improvements to Office Entrances
- SF TrackOne Common Room
- SF MEng Study Space
- BA Engineering Science Student and Administrative Space
- SF Atrium Ceiling and Seating Replacement
- ECE Photovoltaics Research Lab
- Faculty Administrative and Decanal Offices
- MIE & MSE Fumehood Stack Extension
- Mining Attic Renovation and Exterior Building Restoration

**Note:** For details, please visit: www.enews.engineering.utoronto.ca/enews31.html

# 12. Glossary

| | |
|---|---|
| **AAAS** | American Association for the Advancement of Science: www.aaas.org |
| **ACCE** | American College of Clinical Engineering: www.accenet.org |
| **AIAA** | American Institute of Aeronautics and Astronautics: www.aiaa.org |
| **AIMBE** | American Institute for Medical and Biological Engineering: www.aimbe.org |
| **ARWU** | Academic Ranking of World Universities: www.arwu.org |
| **ASEE** | American Society for Engineering Education: www.asee.org |
| **ASME** | American Society of Mechanical Engineers: www.asme.org |
| **CFI** | Canada Foundation for Innovation: www.innovation.ca/en |
| **CGEN** | Centre for Global Engineering. For more information, visit www.engineering.utoronto.ca/about/ddi/governance/council.htm and click on the report listed under May 27, 2009. |
| **ChemE** | Department of Chemical Engineering and Applied Chemistry: www.chem-eng.utoronto.ca |
| **CIHR** | Canadian Institutes of Health Research: www.cihr-irsc.gc.ca |
| **CivE** | Department of Civil Engineering: www.civil.engineering.utoronto.ca |
| **CRC** | Canada Research Chair: www.chairs-chaires.gc.ca |
| **ECE** | The Edward S. Rogers Sr. Department of Electrical and Computer Engineering: www.ece.utoronto.ca |
| **ECP** | Engineering Communication Program: www.engineering.utoronto.ca/about/programs/communication |
| **EDU** | Extra-Departmental Unit: www.provost.utoronto.ca/policy/interdisciplinary |
| **EDU:C** | Normally a multidisciplinary multidepartmental research and/or academic unit with a defined research domain in a particular area of academic work. It exists to foster research and scholarly interest in the area. For more information: www.provost.utoronto.ca/policy/interdisciplinary |
| **ELITE** | Entrepreneurship, Leadership, Innovation and Technology in Engineering: www.engineering.utoronto.ca/informationfor/graduate/elite |
| **EngSci** | Division of Engineering Science: www.engsci.utoronto.ca |
| **Engineering Society** | Student government for Engineering students at the University of Toronto: www.skule.ca |
| **EPP** | Engineering and Public Policy |
| **ÉTS** | École de Technologie Supérieure: www.etsmtl.ca |
| **FTE** | Full-Time Equivalent |

| | |
|---|---|
| **Formula SAE** | Student design team that builds a Formula-style race car and competes in events organized by the Society of Automotive Engineers (SAE): www.fsae.utoronto.ca |
| **G13** | Group of leading, research-intensive universities in Canada, including: University of Alberta, University of British Columbia, University of Calgary, Dalhousie University, Université Laval, McGill University, McMaster University, Université de Montreal, University of Ottawa, Queen's University, University of Toronto, University of Waterloo, University of Western Ontario |
| **GRIP +** | Government Research Infrastructure Program |
| **Headcount** | Number of degree-seeking students |
| **HEEACT** | Higher Education Evaluation and Accreditation Council of Taiwan: ranking.heeact.edu.tw/en-us/2009/Page/Methodology |
| **HiCi** | Highly Cited research |
| **IBBME** | Institute of Biomaterials and Biomedical Engineering: www.ibbme.utoronto.ca |
| **IEEE** | Institute of Electrical and Electronics Engineers: www.ieee.org |
| **IPSI** | Identity, Privacy and Security Institute: www.ipsi.utoronto.ca |
| **KAIST** | Korea Advanced Institute of Science and Technology: www.kaist.edu |
| **KAUST** | King Abdullah University of Science and Technology: www.kaust.edu.sa |
| **MEng ELITE** | Master of Engineering with Entrepreneurship, Leadership, Innovation and Technology in Engineering certificate: www.engineering.utoronto.ca/informationfor/graduate/elite |
| **MEng EPP** | Master of Engineering with Engineering and Public Policy certificate |
| **MIE** | Department of Mechanical and Industrial Engineering: www.mie.utoronto.ca |
| **MIT** | Massachusetts Institute of Technology: www.mit.edu |
| **MSE** | Department of Materials Science and Engineering: www.mse.utoronto.ca |
| **NARSAD** | National Alliance for Research on Schizophrenia and Depression: www.narsad.org |
| **NASM** | Net Assignable Square Metres |
| **NSERC** | Natural Sciences and Engineering Research Council of Canada: www.nserc-crsng.gc.ca |
| **NSERC CREATE** | Collaborative Research and Training Experience program funded by NSERC: www.nserc-crsng.gc.ca/Professors-Professeurs/Grants-Subs/CREATE-FONCER-eng.asp |
| **OGS** | Ontario Graduate Scholarship program, awarded to graduate students and administered by the Ontario Government |
| **OGSST** | Ontario Graduate Scholarship in Science and Technology, awarded to graduate students |
| **OUAC** | Ontario Universities' Application Centre: www.ouac.on.ca |
| **PEY** | Professional Experience Year Internship Program: www.pey.utoronto.ca |
| **PEO** | Professional Engineers Ontario: www.peo.on.ca |

| | |
|---|---|
| **PPIT** | Prospective Professors in Training: www.engineering.utoronto.ca/about/programs/ppit.htm |
| **PUB** | Published Articles in the field |
| **ROSI** | Repository of Student Information: www.rosi.utoronto.ca |
| **Selectivity** | Number of offers divided by number of applications |
| **Special Student Status** | Also known as a non degree-seeking student. A student who is enrolled in a class, but is not proceeding toward degree completion. Example: A special student is a visiting student from another institution who is taking a course to meet admission requirements for graduate studies. |
| **SSHRC** | Social Sciences and Humanities Research Council: www.sshrc.ca |
| **Tenure Stream Faculty** | Academic staff of the rank of assistant professor, associate professor and professor, excluding lecturers |
| **Three Councils** | Typically refers to NSERC, CIHR, SSHRC |
| **TOP** | Percentage of articles published in top 20% of journals in the field |
| **UNENE** | University Network of Excellence in Nuclear Engineering: www.unene.ca |
| **U of T** | University of Toronto: www.utoronto.ca |
| **UQAC** | Université du Québec à Chicoutimi: www.uqac.ca |
| **UQAT** | Université du Québec en Abitibi-Témiscamingue: www.uqat.ca |
| **UQTR** | Université du Québec à Trois-Rivières: www.uqtr.uquebec.ca |
| **UTF** | University of Toronto Fellowship, awarded to graduate students |
| **UTIAS** | University of Toronto Institute for Aerospace Studies: www.utias.utoronto.ca |
| **Yield** | Number of registered students divided by number of offers |

# 13. Appendix

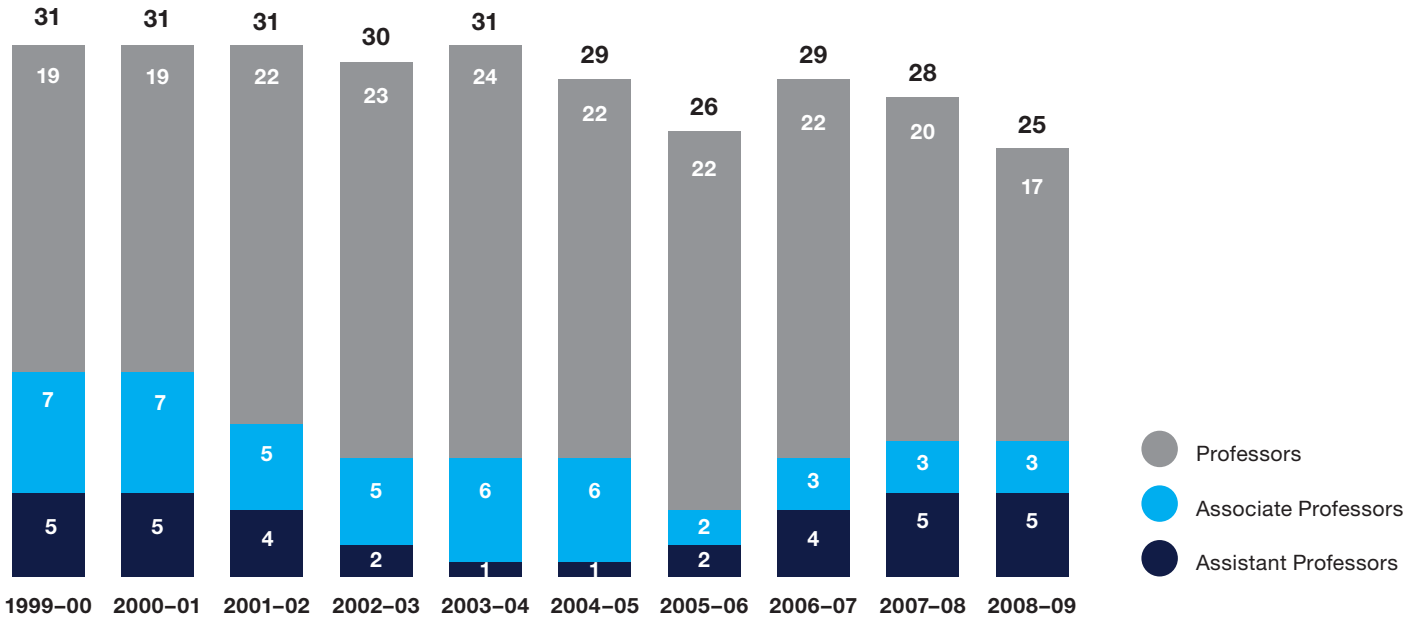
The following section provides a detailed look at the composition of our faculty by academic area from 1999–2000 to 2008–2009. Each academic area is broken down by the number of faculty per position type (Assistant Professor, Associate Professor, Professor and Lecturer/Sr. Lecturer), the number of faculty holding tenure, and percentage of women faculty. A summary is presented on page 14 of this report. Please note, Lecturers from the Engineering Communication Program and Engineering Science are not included in the Appendix.

## Department of Chemical Engineering and Applied Chemistry

### Figure 13.1a
### Academic Staff by Position with Percent of Women
### 1999–2000 to 2008–2009

| | 1999–00 | 2000–01 | 2001–02 | 2002–03 | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Assistant Professors** | 5 | 5 | 4 | 2 | 1 | 1 | 2 | 4 | 5 | 5 |
| **Female Assistant Professors** | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| **% Female Assistant Professors** | 60.0% | 60.0% | 25.0% | 0.0% | 0.0% | 0.0% | 0.0% | 50.0% | 40.0% | 40.0% |
| **Associate Professors** | 7 | 7 | 5 | 5 | 6 | 6 | 2 | 3 | 3 | 3 |
| **Female Associate Professors** | 0 | 0 | 2 | 3 | 3 | 3 | 1 | 1 | 0 | 0 |
| **% Female Associate Professors** | 0.0% | 0.0% | 40.0% | 60.0% | 50.0% | 50.0% | 50.0% | 33.3% | 0.0% | 0.0% |
| **Professors** | 19 | 19 | 22 | 23 | 24 | 22 | 22 | 22 | 20 | 17 |
| **Female Professors** | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 4 | 3 |
| **% Female Professors** | 5.3% | 5.3% | 4.5% | 4.3% | 4.2% | 4.5% | 13.6% | 13.6% | 20.0% | 17.6% |
| **Lecturers/Sr. Lecturers** | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 6 |
| **Female Lecturers/Sr. Lecturers** | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 |
| **% Female Lecturers/Sr. Lecturers** | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 33.3% | 33.3% | 25.0% | 33.3% |
| **Total Tenured and Tenure Stream** | 31 | 31 | 31 | 30 | 31 | 29 | 26 | 29 | 28 | 25 |
| **Female Tenured and Tenure Stream** | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 5 |
| **% Female Tenured and Tenure Stream** | 12.9% | 12.9% | 12.9% | 13.3% | 12.9% | 13.8% | 15.4% | 20.7% | 21.4% | 20.0% |
| **Total Academic Staff** | 35 | 35 | 35 | 34 | 35 | 33 | 29 | 32 | 32 | 31 |
| **Female Academic Staff** | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 7 | 7 | 7 |
| **% Female Academic Staff** | 17.1% | 17.1% | 17.1% | 17.6% | 17.1% | 18.2% | 17.2% | 21.9% | 21.9% | 22.6% |

### Figure 13.1b
### Tenured and Tenure Stream Faculty Distribution



## Department of Civil Engineering

### Figure 13.2a
### Academic Staff by Position with Percent of Women
### 1999–2000 to 2008–2009

| | 1999–00 | 2000–01 | 2001–02 | 2002–03 | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Assistant Professors** | 5 | 6 | 9 | 9 | 9 | 8 | 7 | 11 | 8 | 6 |
| **Female Assistant Professors** | 2 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 3 | 2 |
| **% Female Assistant Professors** | 40.0% | 50.0% | 44.4% | 44.4% | 33.3% | 37.5% | 42.9% | 36.4% | 37.5% | 33.3% |
| **Associate Professors** | 6 | 7 | 6 | 5 | 7 | 9 | 9 | 6 | 10 | 12 |
| **Female Associate Professors** | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 3 |
| **% Female Associate Professors** | 0.0% | 0.0% | 0.0% | 0.0% | 14.3% | 11.1% | 11.1% | 16.7% | 20.0% | 25.0% |
| **Professors** | 15 | 15 | 15 | 17 | 17 | 18 | 19 | 15 | 15 | 15 |
| **Female Professors** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **% Female Professors** | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| **Lecturers/Sr. Lecturers** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| **Female Lecturers/Sr. Lecturers** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **% Female Lecturers/Sr. Lecturers** | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| **Total Tenured and Tenure Stream** | 26 | 28 | 30 | 31 | 33 | 35 | 35 | 32 | 33 | 33 |
| **Female Tenured and Tenure Stream** | 2 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 |
| **% Female Tenured and Tenure Stream** | 7.7% | 10.7% | 13.3% | 12.9% | 12.1% | 11.4% | 11.4% | 15.6% | 15.2% | 15.2% |
| **Total Academic Staff** | 26 | 28 | 30 | 31 | 33 | 35 | 35 | 32 | 34 | 34 |
| **Female Academic Staff** | 2 | 3 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 |
| **% Female Academic Staff** | 7.7% | 10.7% | 13.3% | 12.9% | 12.1% | 11.4% | 11.4% | 15.6% | 14.7% | 14.7% |

### Figure 13.2b
### Tenured and Tenure Stream Faculty Distribution

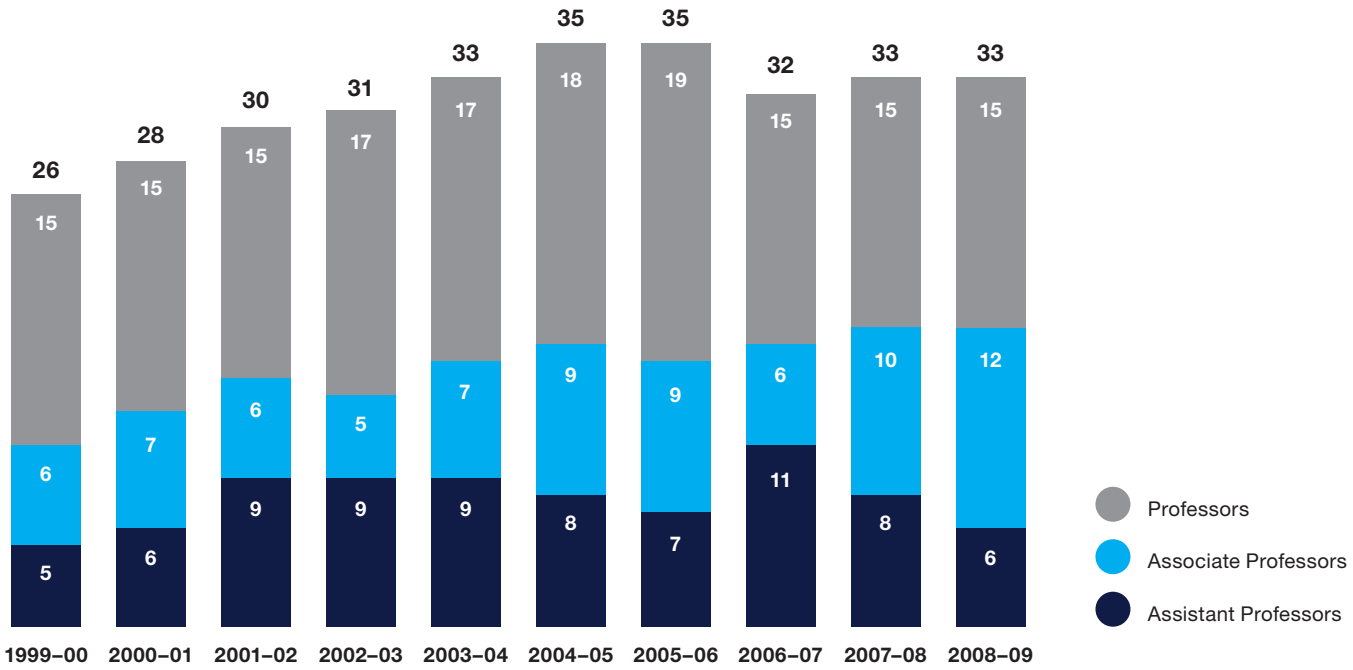
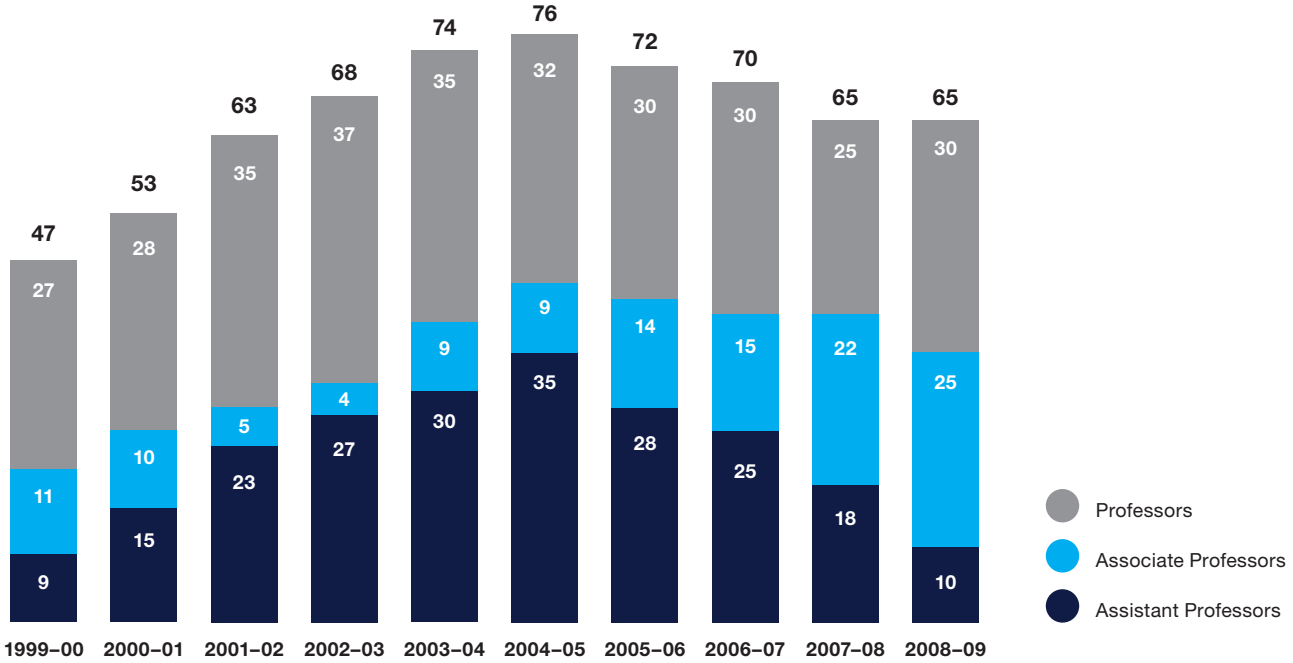


Figure 13.3a
## Academic Staff by Position with Percent of Women 1999–2000 to 2008–2009

| | 1999–00 | 2000–01 | 2001–02 | 2002–03 | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Assistant Professors** | 9 | 15 | 23 | 27 | 30 | 35 | 28 | 25 | 18 | 10 |
| **Female Assistant Professors** | 1 | 1 | 1 | 2 | 3 | 4 | 4 | 5 | 3 | 3 |
| **% Female Assistant Professors** | **11.1%** | **6.7%** | **4.3%** | **7.4%** | **10.0%** | **11.4%** | **14.3%** | **20.0%** | **16.7%** | **30.0%** |
| **Associate Professors** | 11 | 10 | 5 | 4 | 9 | 9 | 14 | 15 | 22 | 25 |
| **Female Associate Professors** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 2 |
| **% Female Associate Professors** | **9.1%** | **10.0%** | **20.0%** | **25.0%** | **11.1%** | **11.1%** | **7.1%** | **0.0%** | **4.5%** | **8.0%** |
| **Professors** | 27 | 28 | 35 | 37 | 35 | 32 | 30 | 30 | 25 | 30 |
| **Female Professors** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **% Female Professors** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** |
| **Lecturers/Sr. Lecturers** | 3 | 3 | 3 | 4 | 3 | 3 | 5 | 5 | 4 | 4 |
| **Female Lecturers/Sr. Lecturers** | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| **% Female Lecturers/Sr. Lecturers** | **66.7%** | **66.7%** | **66.7%** | **50.0%** | **33.3%** | **33.3%** | **20.0%** | **20.0%** | **25.0%** | **25.0%** |
| **Total Tenured and Tenure Stream** | 47 | 53 | 63 | 68 | 74 | 76 | 72 | 70 | 65 | 65 |
| **Female Tenured and Tenure Stream** | 2 | 2 | 2 | 3 | 4 | 5 | 5 | 5 | 4 | 5 |
| **% Female Tenured and Tenure Stream** | **4.3%** | **3.8%** | **3.2%** | **4.4%** | **5.4%** | **6.6%** | **6.9%** | **7.1%** | **6.2%** | **7.7%** |
| **Total Academic Staff** | 50 | 56 | 66 | 72 | 77 | 79 | 77 | 75 | 69 | 69 |
| **Female Academic Staff** | 4 | 4 | 4 | 5 | 5 | 6 | 6 | 6 | 5 | 6 |
| **% Female Academic Staff** | **8.0%** | **7.1%** | **6.1%** | **6.9%** | **6.5%** | **7.6%** | **7.8%** | **8.0%** | **7.2%** | **8.7%** |

Figure 13.3b
## Tenured and Tenure Stream Faculty Distribution

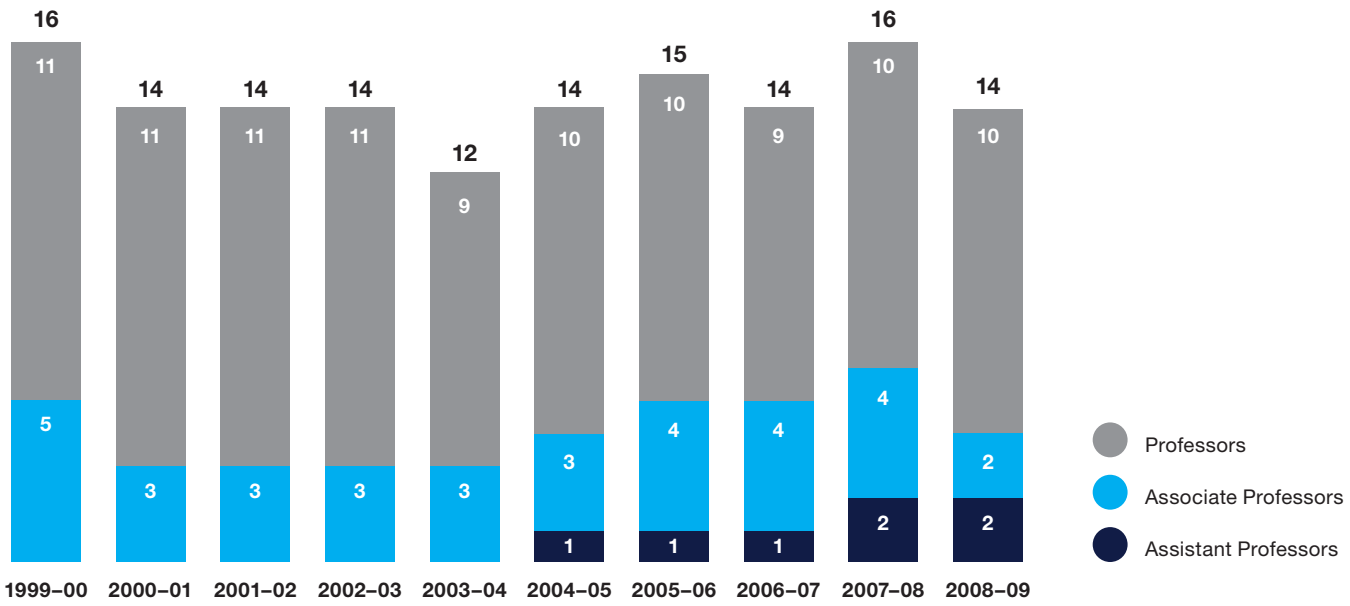


## Department of Materials Science and Engineering

### Figure 13.4a
### Academic Staff by Position with Percent of Women
### 1999–2000 to 2008–2009

| | 1999–00 | 2000–01 | 2001–02 | 2002–03 | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|---|---|---|---|---|---|---|
| Assistant Professors | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 |
| Female Assistant Professors | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Female Assistant Professors | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Associate Professors | 5 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 2 |
| Female Associate Professors | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| % Female Associate Professors | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.0% | 25.0% | 25.0% | 50.0% |
| Professors | 11 | 11 | 11 | 11 | 9 | 10 | 10 | 9 | 10 | 10 |
| Female Professors | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Female Professors | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Lecturers/Sr. Lecturers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Female Lecturers/Sr. Lecturers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Female Lecturers/Sr. Lecturers | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Total Tenured and Tenure Stream | 16 | 14 | 14 | 14 | 12 | 14 | 15 | 14 | 16 | 14 |
| Female Tenured and Tenure Stream | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| % Female Tenured and Tenure Stream | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.7% | 7.1% | 6.3% | 7.1% |
| Total Academic Staff | 16 | 14 | 14 | 14 | 12 | 14 | 15 | 14 | 16 | 14 |
| Female Academic Staff | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| % Female Academic Staff | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.7% | 7.1% | 6.3% | 7.1% |

### Figure 13.4b
### Tenured and Tenure Stream Faculty Distribution

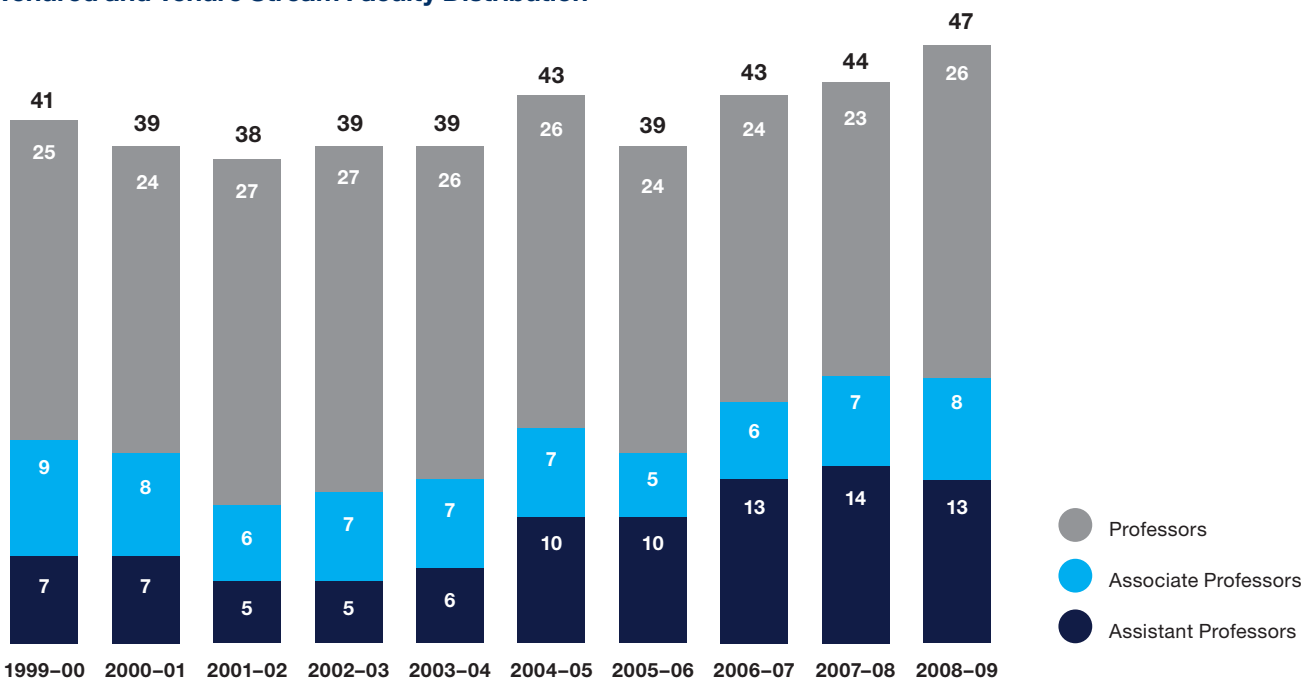


## Department of Mechanical and Industrial Engineering

### Figure 13.5a
### Academic Staff by Position with Percent of Women
### 1999–2000 to 2008–2009

| | 1999–00 | 2000–01 | 2001–02 | 2002–03 | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Assistant Professors** | 7 | 7 | 5 | 5 | 6 | 10 | 10 | 13 | 14 | 13 |
| **Female Assistant Professors** | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 5 |
| **% Female Assistant Professors** | **28.6%** | **28.6%** | **20.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **7.1%** | **38.5%** |
| **Associate Professors** | 9 | 8 | 6 | 7 | 7 | 7 | 5 | 6 | 7 | 8 |
| **Female Associate Professors** | 1 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| **% Female Associate Professors** | **11.1%** | **25.0%** | **33.3%** | **42.9%** | **42.9%** | **42.9%** | **40.0%** | **33.3%** | **28.6%** | **25.0%** |
| **Professors** | 25 | 24 | 27 | 27 | 26 | 26 | 24 | 24 | 23 | 26 |
| **Female Professors** | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 2 |
| **% Female Professors** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **4.2%** | **8.3%** | **8.7%** | **7.7%** |
| **Lecturers/Sr. Lecturers** | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 3 |
| **Female Lecturers/Sr. Lecturers** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **% Female Lecturers/Sr. Lecturers** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **0.0%** | **33.3%** |
| **Total Tenured and Tenure Stream** | 41 | 39 | 38 | 39 | 39 | 43 | 39 | 43 | 44 | 47 |
| **Female Tenured and Tenure Stream** | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 5 | 9 |
| **% Female Tenured and Tenure Stream** | **7.3%** | **10.3%** | **7.9%** | **7.7%** | **7.7%** | **7.0%** | **7.7%** | **9.3%** | **11.4%** | **19.1%** |
| **Total Academic Staff** | 41 | 39 | 38 | 39 | 39 | 44 | 40 | 44 | 45 | 50 |
| **Female Academic Staff** | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 5 | 10 |
| **% Female Academic Staff** | **7.3%** | **10.3%** | **7.9%** | **7.7%** | **7.7%** | **6.8%** | **7.5%** | **9.1%** | **11.1%** | **20.0%** |

### Figure 13.5b
### Tenured and Tenure Stream Faculty Distribution

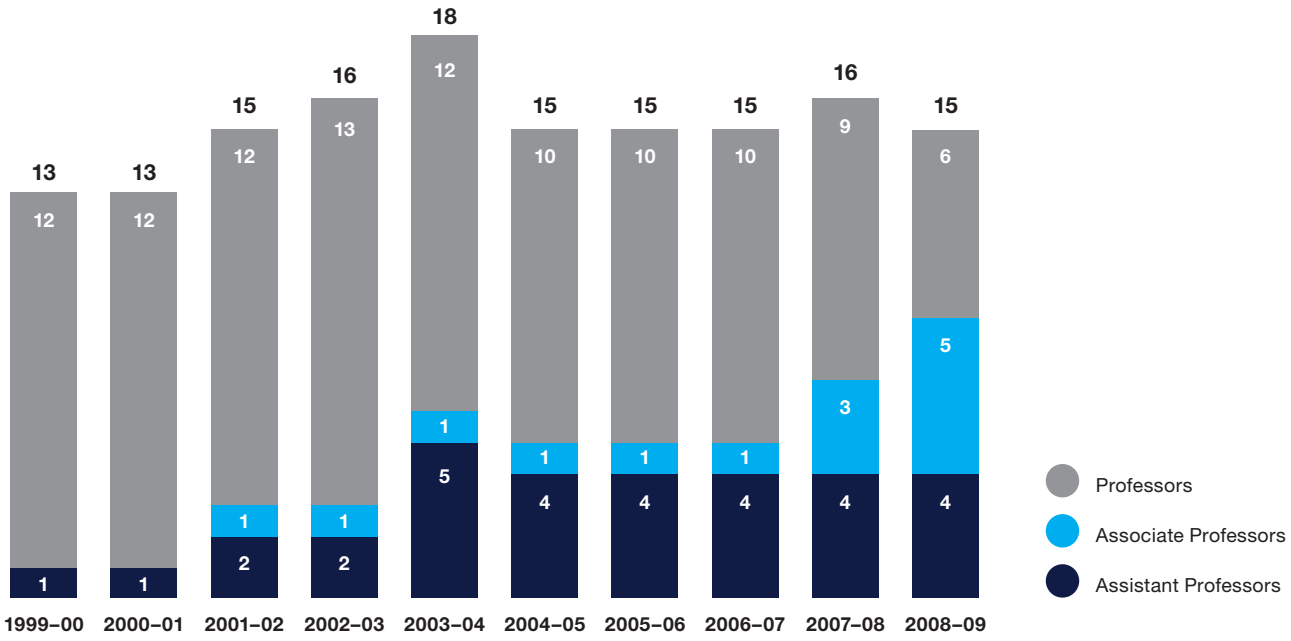


## University of Toronto Institute for Aerospace Studies

### Figure 13.6a
### Academic Staff by Position with Percent of Women
### 1999–2000 to 2008–2009

| | 1999–00 | 2000–01 | 2001–02 | 2002–03 | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|---|---|---|---|---|---|---|
| Assistant Professors | 1 | 1 | 2 | 2 | 5 | 4 | 4 | 4 | 4 | 4 |
| Female Assistant Professors | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| % Female Assistant Professors | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.0% | 25.0% |
| Associate Professors | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 5 |
| Female Associate Professors | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Female Associate Professors | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Professors | 12 | 12 | 12 | 13 | 12 | 10 | 10 | 10 | 9 | 6 |
| Female Professors | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Female Professors | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Lecturers/Sr. Lecturers | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| Female Lecturers/Sr. Lecturers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Female Lecturers/Sr. Lecturers | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Total Tenured and Tenure Stream | 13 | 13 | 15 | 16 | 18 | 15 | 15 | 15 | 16 | 15 |
| Female Tenured and Tenure Stream | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| % Female Tenured and Tenure Stream | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.3% | 6.7% |
| Total Academic Staff | 14 | 14 | 17 | 18 | 20 | 17 | 18 | 17 | 18 | 17 |
| Female Academic Staff | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| % Female Academic Staff | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.6% | 5.9% |

### Figure 13.6b
### Tenured and Tenure Stream Faculty Distribution

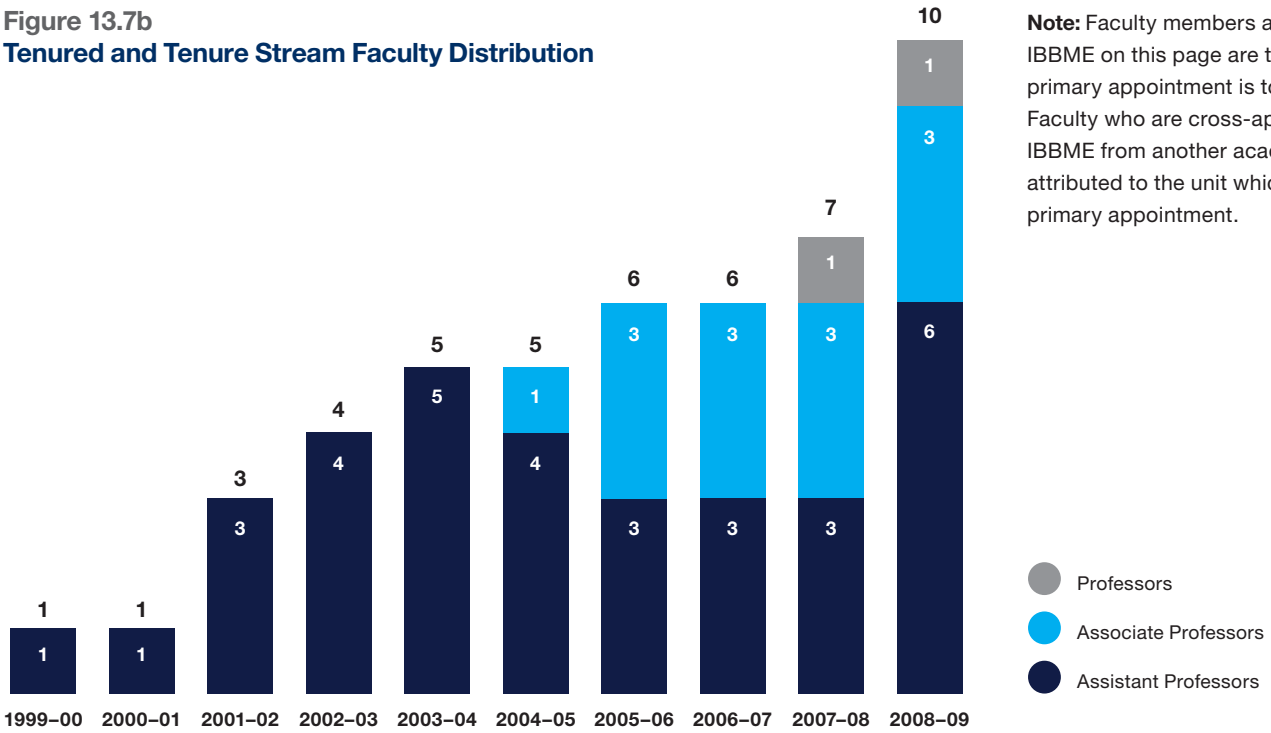


## Institute of Biomaterials and Biomedical Engineering

### Figure 13.7a
### Academic Staff by Position with Percent of Women
### 1999–2000 to 2008–2009

| | 1999–00 | 2000–01 | 2001–02 | 2002–03 | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 | 2008–09 |
|---|---|---|---|---|---|---|---|---|---|---|
| Assistant Professors | 1 | 1 | 3 | 4 | 5 | 4 | 3 | 3 | 3 | 6 |
| Female Assistant Professors | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | 4 |
| % Female Assistant Professors | 0.0% | 0.0% | 0.0% | 0.0% | 20.0% | 25.0% | 66.7% | 66.7% | 66.7% | 66.7% |
| Associate Professors | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 |
| Female Associate Professors | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Female Associate Professors | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Professors | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Female Professors | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Female Professors | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Lecturers/Sr. Lecturers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Female Lecturers/Sr. Lecturers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Female Lecturers/Sr. Lecturers | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Total Tenured and Tenure Stream | 1 | 1 | 3 | 4 | 5 | 5 | 6 | 6 | 7 | 10 |
| Female Tenured and Tenure Stream | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | 4 |
| % Female Tenured and Tenure Stream | 0.0% | 0.0% | 0.0% | 0.0% | 20.0% | 20.0% | 33.3% | 33.3% | 28.6% | 40.0% |
| Total Academic Staff | 1 | 1 | 3 | 4 | 5 | 5 | 6 | 6 | 7 | 10 |
| Female Academic Staff | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | 4 |
| % Female Academic Staff | 0.0% | 0.0% | 0.0% | 0.0% | 20.0% | 20.0% | 33.3% | 33.3% | 28.6% | 40.0% |

### Figure 13.7b
### Tenured and Tenure Stream Faculty Distribution




**Note:** Faculty members attributed to IBBME on this page are those whose primary appointment is to IBBME. Faculty who are cross-appointed to IBBME from another academic unit are attributed to the unit which holds their primary appointment.

# 14. Data Sources

This section indicates the source for data presented throughout the Dean's Report. Sources are organized in order of appearance within the Report by page number, figure number, and title.

## Introduction

Pg 4 Fig 1

### Undergraduate, Master and PhD Student Enrolment (Full-Time Equivalent) and Degrees Awarded with Percentage of Women, 2007–2008

Canadian Engineers for Tomorrow: Trends in Engineering Enrolment and Degrees Awarded 2003–2007. Published by Engineers Canada in August 2009. In some cases the U of T data from Engineers Canada report is augmented by data from the U of T Reporting Cube. To read the full Engineers Canada report, please visit www.engineerscanada.ca/files/w_report_enrolment_eng.pdf

Pg 5 Fig 2

### Student Enrolment (Headcount), Degrees Awarded, Number of Administrative and Academic Staff, Funding, Revenue and Space, 2008–2009

All student enrolment statistics are based on headcount for Fall 2008 from the Undergraduate or Graduate U of T Reporting Cube (St. George and U of T statistics do not include Toronto School of Theology). All degrees awarded statistics come from ROSI and reflect September 2008 to June 2009 dates (St. George and U of T statistics do not include Toronto School of Theology). All sponsored research funding statistics come from U of T Research Reporting Cube (based on 2008 fiscal year and excludes partner hospitals; includes all program types). Engineering academic staff statistics provided by Assistant Dean, Academic HR & Diversity, Faculty of Applied Science and Engineering (based on HRIS and published lists of faculty members). Engineering administrative and technical staff statistic from 2008 Resources Survey prepared by Engineers Canada for NCDEAS (based on calendar year). U of T academic and administrative staff statistics come from U of T Human Resources & Equity Annual Report 2008: www.hrandequity.utoronto.ca/Assets/reports/hre/2008.pdf?method=1. Engineering total revenue provided by Chief Administrative Officer, Faculty of Applied Science and Engineering. U of T total revenue provided by the Office of the Vice-Provost, Planning & Budget. Engineering space statistic from the Faculty's 2008–2009 Divisional Space Review. U of T and St. George space statistics from U of T Facts and Figures 2008: www.utoronto.ca/about-uoft/quickfacts/factsandfigures/facts_and_figures_2008

## 1. Comparisons and Rankings

Pg 7 Fig 1.1a

### Times Higher Education-Q.S. World University Rankings and U.S. News & World Report World's Best Colleges and Universities, Top 50 Universities for Engineering and Information Technology, 2008–2009

Times Higher Education-Q.S. 2008 and U.S. News & World Report 2009. For more information please visit: www.topuniversities.com/university-rankings and www.usnews.com/sections/education/worlds-best-colleges/index.html

Pg 7 Fig 1.1b

### Canadian G13 in Top 100 from Times Higher Education-Q.S. and U.S. News & World Report Rankings for Engineering and Information Technology

Times Higher Education-Q.S. 2008 and U.S. News & World Report 2009. For more information please visit: www.topuniversities.com/university-rankings and www.usnews.com/sections/education/worlds-best-colleges/index.html

Pg 8 Fig 1.2a

### Shanghai Jiao Tong Academic Ranking of World Universities, Top 50 Universities for Engineering/Technology and Computer Sciences, 2008

Engineering/Technology and Computer Sciences, Shanghai Jiao Tong Academic Ranking of World Universities, 2008. For more information, please visit: www.arwu.org

Pg 8 Fig 1.2b

### Canadian G13 in Top 100 from Shanghai Jiao Tong Academic Ranking for Engineering/ Technology and Computer Sciences

Engineering/Technology and Computer Sciences, Shanghai Jiao Tong Academic Ranking of World Universities, 2008. For more information, please visit: www.arwu.org

Pg 9 Fig 1.2c

**Scoring Analysis of Canadian G13 in Top 100 from Shanghai Jiao Tong Academic Ranking for Engineering/Technology and Computer Sciences**

Engineering/Technology and Computer Sciences, Shanghai Jiao Tong Academic Ranking of World Universities 2008. Scores for McGill University and University of British Columbia were unavailable for the FUND indicator. For more information, please visit: www.arwu.org

Pg 9 Fig 1.3

**Higher Education Evaluation & Accreditation Council of Taiwan (HEEACT) Performance Ranking of Engineering Papers for World Universities, 2008**

Higher Education Evaluation & Accreditation Council of Taiwan 2008 Performance Ranking of Engineering Papers for World Universities. Data compiled from Thomson Reuters' science citation indexes. For more information, please visit: ranking.heeact.edu.tw/en-us/2009/Page/Methodology

Pg 10 Fig 1.4a

**Number of Engineering Publications Indexed by Thomson Reuters Association of American Universities (AAU) Public and Canadian Peer Institutions, 2003–2007**

Thomson Reuters U.S. and Canadian University Indicators 2007. Analysis limited to the most recent five-year period of 2003–2007 and to public institutions only.

Pg 10 Fig 1.4b

**Summary of G13 Bibliometrics for Publications**

Thomson Reuters U.S. and Canadian University Indicators 2007. Analysis limited to the most recent five-year period of 2003–2007 and to public institutions only. U of T Engineering faculty count presented here differs from faculty counts presented elsewhere in the Annual Report due to the exclusion of Lecturers by Thomson Reuters.

Pg 11 Fig 1.5a

**Number of Engineering Citations Indexed by Thomson Reuters Association of American Universities (AAU) Public and Canadian Peer Institutions, 2003–2007**

Thomson Reuters U.S. and Canadian University Indicators 2007. Analysis limited to the most recent five-year period of 2003–2007 and to public institutions only.

Pg 11 Fig 1.5b

**Summary of G13 Bibliometrics for Citations**

Thomson Reuters U.S. and Canadian University Indicators 2007. Analysis limited to the most recent five-year period of 2003–2007 and to public institutions only. U of T Engineering faculty count presented here differs from faculty counts presented elsewhere in the Annual Report due to the exclusion of Lecturers by Thomson Reuters.

## 2. Faculty

Pg 13 Fig 2.1

**Faculty Organizational Chart, 2008–2009**

Information provided by Office of the Dean, Faculty of Applied Science and Engineering.

Pg 14 Fig 2.2

**Academic Administrative Faculty Roles, 2000–2009**

Information provided by Office of the Dean, Faculty of Applied Science and Engineering.

Pg 15 Fig 2.3a

**Total Academic Staff by Academic Area, 1999–2000 to 2008–2009**

Information provided by Assistant Dean, Academic HR & Diversity, Faculty of Applied Science and Engineering. Faculty counts based on information in HRIS and published lists of faculty.

Pg 15 Fig 2.3b

**Total Academic Staff by Academic Area and Position, 1999–2000 to 2008–2009**

Information provided by Assistant Dean, Academic HR & Diversity, Faculty of Applied Science and Engineering. Faculty counts based on information in HRIS and published lists of faculty.

Pg 16 Fig 2.4

**Licensure of Faculty by Professional Engineers Ontario, 2005–2009**

Licensure statistics from Comments on the Canadian Engineering Accreditation Board, Report on the Accreditation Visit to the University of Toronto, April 2009.

## 3. Awards and Honours

Pg 18

**Summary of Selected Major Awards, September 2007 to April 2009**
Information provided by Director, Awards & Honours, Faculty of Applied Science and Engineering.

Pg 20 Fig 3.1

**Summary of Major International, National and Provincial Awards and Honours, 2000–2009**
Information provided by Director, Awards & Honours, Faculty of Applied Science and Engineering.

Pg 21 Fig 3.2a

**Number of Awards Received by U of T Engineering Compared to Other Canadian Engineering Faculties, 2008**
Data from Engineers Canada website: www.engineerscanada.ca

Pg 21 Fig 3.2b

**Percent of Engineering Faculty and Total Major Awards Received in Canadian Engineering Faculties, 2008**
Data from Engineers Canada website: www.engineerscanada.ca

Pg 22

**Summary of University of Toronto Awards Received by Engineering, September 2007 to April 2009**
Information provided by Director, Awards & Honours, Faculty of Applied Science and Engineering.

Pg 23

**Summary of U of T Engineering Awards, 2001–2009**
Information provided by Director, Awards & Honours, Faculty of Applied Science and Engineering.

## 4. Undergraduate Students

Pg 25 Fig 4.1

**Cultural Heritage of Undergraduate Students, Fall 2008**
Headcount for Fall 2008 from U of T Undergraduate Enrolment Cube.
**Cube Parameters:** Years 1–4 (SESLEV), 2008–2009 Academic Year, by Continent of Citizenship (CUNCIT).

Pg 25 Fig 4.2

**Applications, Offers, Registration, Yield and Selectivity of First Year Undergraduate Students, 2001–2008**
All data are representative of November 1 headcounts acquired from ROSI; except Registration, which comes from U of T Undergraduate Enrolment Reporting Cube. **ROSI Downloads:** 3FIA (Applicants) and 3FID (Admissions), Faculty = APSC, New Students Only (based on candidacy session). **Cube Parameters:** All Fall Terms for 2001–2008, Year 1 (SESLEV), First Time Registered (LEVSTAT), Measure = Headcount.

Pg 26 Fig 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**
Averages of incoming First Year students from Ontario Universities' Application Centre. Retention rates from Undergraduate Enrolment Projections documents, published by the University of Toronto Planning and Budget Office, October 2008 and January 2009.

Pg 27 Fig 4.4

**First Year Undergraduate Student Headcount with Percent Women and International Students, 2001–2008**
Headcount from U of T Undergraduate Enrolment Cube. Excludes students with special status.
**Cube Parameters:** All Fall Terms for 2001–2008, First Time Registered (LEVSTAT), Measure = Headcount, [Gender] and [DOM_INTL] parameters used to calculate percentages of women and international students, respectively.

Pg 27 Fig 4.5

### First Year Domestic Undergraduate Student Headcount, 2005–2008

Headcount from University of Toronto Enrolment Master Files, the source of U of T Reporting Cube. Includes new and returning students. Excludes students with special status. **Cube Parameters:** Year 1 (SESLEV), Fall Terms for 2005–2008, Degree Type = Undergraduate, Excludes students with special status.

Pg 28 Fig 4.6

### Undergraduate Student Headcount by Academic Area, Fall 2008

Headcount from U of T Undergraduate Enrolment Reporting Cube. Includes full-time students, part-time students and students on PEY Internship. Excludes students with special status. **Cube Parameters:** Years 1–4, Fall 2008, by Department, Degree Type = Undergraduate.

Pg 28 Fig 4.7

### Full-Time Equivalent Undergraduate Students, Fall 2001 to Fall 2008

FTE numbers from U of T Undergraduate Enrolment Reporting Cube. Includes students on PEY Internship. Excludes students with special status. **Cube Parameters:** All Fall Terms for 2001–2008, Years 1–4 (SESLEV), Measure = Total FTE (Factbook), Degree Type = Undergraduate.

Pg 28 Fig 4.8

### Full-Time Equivalent Undergraduate Students by Year of Study, Fall 2008

FTE numbers from U of T Undergraduate Enrolment Reporting Cube. Includes students on PEY Internship. Excludes students with special status. **Cube Parameters:** Years 1–4 (SESLEV), Fall 2008, Measure = Total FTE (Factbook).

Pg 29 Fig 4.9

### Undergraduate Student Headcount by Academic Area, 2000–2001 to 2008–2009

Headcount for Fall of each year from U of T Undergraduate Enrolment Reporting Cube. Includes full-time students, part-time students and students on PEY Internship. Excludes students with special status. **Cube Parameters:** All Fall Terms for 2000–2008, Years 1–4 (SESLEV), Degree Type = Undergraduate, Measure = Headcount, Departments based on [Programs] field.

Pg 30 Fig 4.10

### Full-Time Equivalent Undergraduate Student-Faculty Ratios by Academic Area, 2008–2009

Number of FTE undergraduate students from U of T Undergraduate Enrolment Reporting Cube. Includes students on PEY Internship. Excludes students with special status. Number of faculty included in the calculation provided by Assistant Dean, HR & Diversity, Faculty of Applied Science and Engineering (based on HRIS and published lists of faculty). **Cube Parameters:** Fall 2008, Years 1–4 (SESLEV), Degree Type = Undergraduate, Measure = Total FTE (Factbook).

Pg 30 Fig 4.11

### Undergraduate Degrees Awarded by Academic Area, 1999–2000 to 2008–2009

Data for years up to 2006–2007 acquired from U of T Degrees Awarded Reporting Cube. More recent academic years (September to August) derived from ROSI. **Cube Parameters:** Undergraduate, Academic Years 1999–2009. **ROSI Download:** 5EA (Graduate Students), Faculty = APSC.

Pg 32

### Engineering Student Clubs and Teams

Information from Engineering Society: www.skule.ca

Pg 34

### Engineering Leaders of Tomorrow

Information provided by Co-Leader, Leaders of Tomorrow, Faculty of Applied Science and Engineering.

Pg 34

### Galbraith Scholars Program

Information provided by Chair, First Year and Associate Director, Engineering Student Recruitment and Retention Office, Faculty of Applied Science and Engineering.

Pg 35 Fig 4.12a

### PEY Internship Placements for Engineering Students, 2000–2008

PEY placement statistics provided by Assistant Director, Engineering Career Centre, Faculty of Applied Science and Engineering.

Pg 35 Fig 4.12b

### Canadian and International PEY Internship Placements for Engineering Students, 2004–2008

PEY placement statistics provided by Assistant Director, Engineering Career Centre, Faculty of Applied Science and Engineering.

## 5. Graduate Students

Pg 37 Fig 5.1

### Cultural Heritage of Graduate Students, Fall 2008

Headcount for Fall 2008 from U of T Graduate Enrolment Reporting Cube. **Cube Parameters:** Academic Years 2008–2009, by Continent of Citizenship (CUNCIT).

Pg 37 Fig 5.2

### Graduate Student Headcount by Degree Type, 2000–2001 to 2008–2009

Headcount for Fall terms from U of T Graduate Enrolment Reporting Cube. Excludes special students. **Cube Parameters:** All Fall Terms for 2000–2008, Measure = Headcount.

Pg 38 Fig 5.3

### Graduate Student Enrolment by Full-Time Equivalent (FTE) and Headcount (HC) by Area of Study, 2000–2001 to 2008–2009

FTE and headcount for Fall terms from U of T Graduate Enrolment Reporting Cube. **Cube Parameters:** All Fall terms for 2000–2008, Measure = Headcount or Total FTE (UAR).

Pg 39 Fig 5.4

### Graduate Degrees Awarded by Degree Type and Gender, 2000–2001 to 2008–2009

Data for years up to 2006–2007 from U of T Degrees Awarded Reporting Cube. More recent academic years (September to August) derived from ROSI. **Cube Parameters:** Graduate, Academic Years 2000–2009. **ROSI Download:** 5EA (Graduate Students), Faculty = SGS, Co-Secondary Org = APSC.

Pg 39 Fig 5.5

### Full-Time Equivalent Graduate Student-Faculty Ratios by Academic Area, 2008–2009

Number of FTE graduate students from U of T Graduate Enrolment Reporting Cube. Number of faculty included in the calculation provided by Assistant Dean, HR & Diversity, Faculty of Applied Science and Engineering with input from Vice-Dean, Graduate Studies and Director, IBBME. **Cube Parameters:** Fall 2008, Measure = Total FTE (UAR), Exclude students with special status.

Pg 40 Fig 5.6

### Enrolment in MEng/ELITE, 2006–2007 to 2008–2009

Represents graduate student enrolment only. Based on May 2009 enrolment from ROSI.

Pg 41 Fig 5.7

### Enrolment in PPIT, 2006–2007 to 2008–2009

Based on May 2009 enrolment from the PPIT database maintained by PPIT graduate assistants.

Pg 42 Fig 5.8

### Graduate Student Funding by Academic Area, 2008–2009

Information provided by the Graduate Administrator for each Engineering Department, Institute and Division. Data compiled by Faculty Graduate Coordinator, Vice-Dean Graduate Studies Office.

## 6. Research

Pg 44 Fig 6.1

### Research Funding by Year and Source, 2000–2008

Data from the U of T Research Cube. Data are current as of January 2009. Organized by fiscal year (e.g. fiscal year 2008 = April 2007 to March 2008).

Pg 45 Fig 6.2a

### Canadian Peer Universities vs. University of Toronto Engineering Share of Natural Sciences and Engineering Research Council of Canada Funding, Cumulative 5-Year Share, 2003–2004 to 2007–2008

All data from NSERC Award Search Engine: www.outil.ost.uqam.ca/CRSNG/Outil.aspx?Langue=Anglais. Grants only (no scholarships). Does not include Canada Research Chairs (CRCs), Networks of Excellence (NCEs) or Indirect Costs of Research (FICR).

Pg 45 Fig 6.2b

### University of Toronto Share of NSERC Funding in Engineering, 2003–2004 to 2007–2008

All data from NSERC Award Search Engine: www.outil.ost.uqam.ca/CRSNG/Outil.aspx?Langue=Anglais. Grants only (no scholarships). Does not include Canada Research Chairs (CRCs), Networks of Excellence (NCEs) or Indirect Costs of Research (FICR).

Pg 46 Fig 6.3a

### Total University of Toronto Invention Disclosures, 2000–2008

Information provided by Jennifer MacInnis, Director, Intellectual Property & Contracts, Office of the Vice-President, Research.

Pg 46 Fig 6.3b

### Engineering Invention Disclosures by Academic Area, 2000–2008

Information provided by Jennifer MacInnis, Director, Intellectual Property & Contracts, Office of the Vice-President, Research.

Pg 47 Fig 6.4

### Engineering Spin-off Companies, 1951–2009

Information provided by The Innovations Group, University of Toronto: www.innovations.utoronto.ca and by faculty in Engineering.

Pg 49 Fig 6.5

### Research Chairs, 2008–2009

Information from Canada Research Chair website: www.chairs-chaires.gc.ca, Industrial Research Chair website: www.nserc-crsng.gc.ca/Professors-Professeurs/CFS-PCP/IRC-PCI_eng.asp and the Office of Advancement, Faculty of Applied Science and Engineering.

## 7. Multidisciplinary Education and Research

Pg 52

### Identity, Privacy and Security Institute

Information from Faculty Council Report 3230: Identity, Privacy and Security Institute Proposal. For details, visit www.engineering.utoronto.ca/about/ddi/governance/council and click on the report listed under May 27, 2009.

Pg 52

### Centre for Global Engineering

Information from Faculty Council Report 3228: Centre for Global Engineering Proposal. For details, visit www.engineering.utoronto.ca/about/ddi/governance/council and click on the report listed under May 27, 2009.

Pg 53

### Cross-Disciplinary Programs Office

Information from Faculty Council Report 3229: Cross-Disciplinary Programs Office Proposal. For details, visit www.engineering.utoronto.ca/about/ddi/governance/council and click on the report listed under May 27, 2009.

## 8. Diversity

Pg 55 Fig 8.1

### Percentage of Women Graduate Students, Undergraduate Students, First Year Students, and Faculty in Engineering, 2000–2001 to 2008–2009

Graduate, undergraduate and First Year headcount from U of T Enrolment Reporting Cube. Enrolment data exclude students with special status. Number of Assistant Professors and faculty provided by Assistant Dean, HR & Diversity, Faculty of Applied Science and Engineering.

Pg 55 Fig 8.2

**Undergraduate Women in Engineering, 1960–1961 to 2008–2009**
Information from ROSI and the Student Legacy System, the archival source for student enrolment records prior to ROSI.

Pg 56 Fig 8.3

**Number of Men and Women Faculty with Percentage of Women Faculty, 1999–2000 to 2008–2009**
Information provided by Assistant Dean, HR & Diversity, Faculty of Applied Science and Engineering.

Pg 56 Fig 8.4

**Percentage of Women Faculty by Academic Area, 1999–2000 to 2008–2009**
Information provided by Assistant Dean, HR & Diversity, Faculty of Applied Science and Engineering.

Pg 57 Fig 8.5a

**Women Holding Academic Administrative Faculty Roles, 2000–2009**
Information provided by Assistant Dean, HR & Diversity, Faculty of Applied Science and Engineering.

Pg 57 Fig 8.5b

**Academic Administrative Faculty Roles and Percentage of Women, 2000–2009**
Information provided by Assistant Dean, HR & Diversity, Faculty of Applied Science and Engineering.

Pg 58 Fig 8.6

**Percentage of Women Faculty at U of T Engineering Compared with Women Faculty in Ontario and Canadian Engineering Faculties, 2008**
Information from 2008 Resources Survey prepared by Engineers Canada for the National Council of Deans of Engineering and Applied Science.

## 9. Globalization

Pg 60

**Task Force on Globalization and Engineering**
Information provided by Director, CGEN and Professor, Globalization, Faculty of Applied Science and Engineering.

Pg 60

**Academic Initiatives**
Information provided by Director, CGEN and Professor, Globalization, Faculty of Applied Science and Engineering.

Pg 60 Fig 9.1

**Cultural Heritage of Current Students and World Distribution of Alumni, 2008–2009**
Cultural heritage of current students based on headcount from U of T Enrolment Reporting Cube. Alumni statistics provided by the Office of Advancement, Faculty of Applied Science and Engineering, based on information from the Division of University Advancement. Alumni statistics and distribution are reflective of alumni as of August 2008.

## 10. Finances

Pg 62 Fig 10.1

**Total Revenue, 2006–2007 to 2008–2009**
Information provided by Chief Administrative Officer, Faculty of Applied Science and Engineering.

Pg 62 Fig 10.2

**Total Central Costs, 2006–2007 to 2008–2009**
Information provided by Chief Administrative Officer, Faculty of Applied Science and Engineering.

Pg 62 Fig 10.3

**Budget Data, 2006–2007 to 2008–2009**
Information provided by Chief Administrative Officer, Faculty of Applied Science and Engineering.

| | | |
|---|---|---|
| Pg 63 | | **Budget Overview for 2008–2009 Fiscal Year**<br>Information provided by Chief Administrative Officer, Faculty of Applied Science and Engineering. |
| Pg 63 | Fig 10.4 | **Revenue Sources, 2008–2009**<br>Information provided by Chief Administrative Officer, Faculty of Applied Science and Engineering. |
| Pg 63 | Fig 10.5 | **Revenue Distribution, 2008–2009**<br>Information provided by Chief Administrative Officer, Faculty of Applied Science and Engineering. |
| Pg 64 | Fig 10.6 | **Operating Budget Breakdown, 2008–2009**<br>Information provided by Chief Administrative Officer, Faculty of Applied Science and Engineering. |
| Pg 64 | | **University and Faculty Budget Models**<br>Information provided by Chief Administrative Officer, Faculty of Applied Science and Engineering. |

## 11. Physical Infrastructure

| | | |
|---|---|---|
| Pg 66 | Fig 11.1 | **Engineering Precinct of the U of T St. George Campus**<br>Information from U of T Campus Map, Office of Space Management. For a full campus map, visit rrs.osm.utoronto.ca/map |
| Pg 67 | Fig 11.2 | **Summary of the Location of Space for all Units within 16 Buildings used by Engineering, 2008–2009**<br>November 2008 inventory presented in the Faculty's 2009 Divisional Space Review. |
| Pg 68 | Fig 11.3 | **Summary of Space Quality Assessment for Engineering Precinct Buildings, 2008–2009**<br>November 2008 inventory presented in the Faculty's 2009 Divisional Space Review. |
| Pg 69 | | **Infrastructure Upgrades Recently Completed or In Progress, 2008–2009**<br>Information provided by Director, Planning and Infrastructure, Faculty of Applied Science and Engineering. |

## 13. Appendix

All information within the Appendix from Assistant Dean, Academic HR & Diversity, Faculty of Applied Science and Engineering. Information based on HRIS and published lists of faculty members.


**For more information, please contact:**
The Dean's Office
Faculty of Applied Science and Engineering
University of Toronto
Phone: 416.978.3131
Email: dean@ecf.utoronto.ca
www.engineering.utoronto.ca