
Vision 2015

Building on Excellence

Waterloo Engineering Strategic Plan
Progress Report 2012/2013

WATERLOO
ENGINEERING

November, 2013

This document is published by the Office of the Dean of Engineering.

Enquiries should be sent to:
Director of Planning, Faculty of Engineering
University of Waterloo
(519) 888-4567 x32544 | mfoulds@uwaterloo.ca

Table of Contents

I. Executive Summary	5
Priorities for 2014	6
Summary of Updated Goals.....	7
Waterloo Engineering Today	8
Waterloo Engineering in Context	9
II. Alignment with the University of Waterloo Strategic Plan	10
III. Vision 2015 Strategic Plan Progress Report.....	11
A. Faculty and Staff	11
B. Undergraduate Studies	13
C. Graduate Studies	17
D. Research.....	20
E. Teaching	23
F. Outreach	24
G. Internationalization.....	27
H. Entrepreneurship	29
I. Space	30
J. Information Technology	31
K. Advancement.....	31
L. Academic Unit Plans.....	33
IV. Key Metrics & Performance Indicators	59
A. Faculty and Staff	59
B. Undergraduate Studies	62
C. Graduate Studies	64
D. Research.....	66
E. Women in Engineering	67
F. Internationalization.....	67
G. Advancement.....	68
H. Space.....	69
V. Appendices.....	70
A. Faculty and Staff Data Tables	70
B. Undergraduate Studies Data Tables	78
C. Graduate Studies Data Tables	87
D. Research Data Tables	98
E. Women in Engineering Data Tables	108
F. Internationalization Data Tables	108
G. Advancement Data Tables	108
H. Data Notes	111

List of Tables and Figures

Table 1: Key Metrics: Current Values and Change from the Vision 2015 Baseline (2010/11).....	8
Table 2: Key Performance Indicators: Current Values and Change from the Vision 2015 Baseline (2010/11).....	8
Table 3: Waterloo Engineering in the Institutional Context, 2012/13	9
Table 4: Waterloo Engineering in the Provincial and National Contexts, 2011	9
Table 5: Waterloo Engineering in International University Rankings, 2013	9
Table 6: Alignment of Vision 2015 and University of Waterloo Strategic Plan Goals	10
Figure 1: Faculty Complement Plan Performance to Target	11
Figure 2: Staff Complement Plan Performance to Target	12
Figure 3: Undergraduate Intake Plan Performance to Target	13
Figure 4: Regular Faculty PEng Status Performance to Target	17
Figure 5: Graduate Intake Plan Performance to Target by Visa Status	18
Figure 6: Graduate Intake Plan Performance to Target by Program Type.....	18
Figure 7: Research Funding Performance to Target	21
Figure 8: High School Programming Performance to Target	25
Figure 9: ESQ Workshop Participation Performance to Target.....	25
Figure 10: Female Undergraduate Confirmation Rate Performance to Target	26
Figure 11: International Undergraduate Student Intake Plan Performance to Target.....	27
Figure 12: Waterloo Engineering Student Participation in International Exchange, 2005-2012	28
Figure 13: International Co-op Work Terms Performance to Target	28
Figure 14: ARCH Faculty Complement Plan Performance to Target.....	33
Figure 15: ARCH Staff Complement Plan Performance to Target	33
Figure 16: ARCH Undergraduate Intake Plan Performance to Target	33
Figure 17: ARCH Graduate Intake Plan Performance to Target by Visa Status	34
Figure 18: ARCH Graduate Intake Plan Performance to Target by Program Type	34
Figure 19: ARCH Research Plan Performance to Target.....	34
Figure 20: Conrad Faculty Complement Plan Performance to Target	35
Figure 21: Conrad Staff Complement Plan Performance to Target	35
Figure 22: Conrad Graduate Intake Plan Performance to Target by Visa Status	36
Figure 23: Conrad Graduate Intake Plan Performance to Target by Program Type.....	36
Figure 24: Conrad Research Plan Performance to Target	37
Figure 25: CHE Regular Faculty Complement Plan Performance to Target.....	38
Figure 26: CHE Regular Faculty PEng Status Performance to Target	38
Figure 27: CHE Staff Complement Plan Performance to Target.....	38
Figure 28: CHE UG Intake Plan Performance to Target	39
Figure 29: NANO UG Intake Plan Performance to Target.....	39
Figure 30: CHE Graduate Intake Plan Performance to Target by Visa Status.....	39
Figure 31: CHE Graduate Intake Plan Performance to Target by Program Type	40
Figure 32: CHE Research Plan Performance to Target	40
Figure 33: CEE Faculty Complement Plan Performance to Target.....	41
Figure 34: CEE Regular Faculty PEng Status Performance to Target.....	41
Figure 35: CEE Staff Complement Plan Performance to Target.....	41
Figure 36: CIV UG Intake Plan Performance to Target	42
Figure 37: ENV UG Intake Plan Performance to Target.....	42
Figure 38: GEO UG Intake Plan Performance to Target	42
Figure 39: CEE Graduate Intake Plan Performance to Target by Visa Status	43
Figure 40: CEE Graduate Intake Plan Performance to Target by Program Type	43
Figure 41: CEE Research Plan Performance to Target	44
Figure 42: ECE Faculty Complement Plan Performance to Target.....	44
Figure 43: ECE Regular Faculty PEng Status Performance to Target.....	45
Figure 44: ECE Staff Complement Plan Performance to Target	45
Figure 45: EE&CE UG Intake Plan Performance to Target.....	45
Figure 46: SE UG Intake Plan Performance to Target	45
Figure 47: ECE Graduate Intake Plan Performance to Target by Visa Status.....	46
Figure 48: ECE Graduate Intake Plan Performance to Target by Program Type	46
Figure 49: ECE Research Plan Performance to Target	47
Figure 50: MSCI Faculty Complement Plan Performance to Target	48
Figure 51: MSCI Regular Faculty PEng Status Performance to Target	48

Figure 52: MSCI Staff Complement Plan Performance to Target	49
Figure 53: MGMT UG Intake Plan Performance to Target	49
Figure 54: MSCI Graduate Intake Plan Performance to Target by Visa Status	50
Figure 55: MSCI Graduate Intake Plan Performance to Target by Program Type	50
Figure 56: MSCI Research Plan Performance to Target	51
Figure 57: MME Faculty Complement Plan Performance to Target	52
Figure 58: MME Regular Faculty PEng Status Performance to Target	52
Figure 59: MME Staff Complement Plan Performance to Target	52
Figure 60: MECH UG Intake Plan Performance to Target	53
Figure 61: MCTR UG Intake Plan Performance to Target	53
Figure 62: MME Graduate Intake Plan Performance to Target by Visa Status	53
Figure 63: MME Graduate Intake Plan Performance to Target by Program Type	54
Figure 64: MME Research Plan Performance to Target	54
Figure 65: SDE Faculty Complement Plan Performance to Target	55
Figure 66: SDE Faculty PEng Status Performance to Target	55
Figure 67: SDE Staff Complement Plan Performance to Target	56
Figure 68: SDE UG Intake Plan Performance to Target	56
Figure 69: SDE Graduate Intake Plan Performance to Target by Visa Status	57
Figure 70: SDE Graduate Intake Plan Performance to Target by Program Type	57
Figure 71: SDE Research Plan Performance to Target	57
Figure 72: Biomedical Engineering Undergraduate Intake Targets	58
Figure 73: Regular Faculty, 2004-2013	59
Figure 74: Regular Faculty by Type, 2013	59
Figure 75: Regular Faculty by Gender, 2013	59
Figure 76: Regular Faculty by PhD School, 2013	59
Figure 77: Regular Faculty by PEng Status, 2013	60
Figure 78: Age Distribution of Regular Faculty, 2013	60
Figure 79: Non-regular and Non-faculty Appointments by Department, 2013	60
Figure 80: Non-regular and Non-faculty Appointments by Type, 2013	60
Figure 81: FTE Staff, 2004-2013	60
Figure 82: FTE Staff in Academic Units, 2013	61
Figure 83: FTE Staff in Administrative Units, 2013	61
Figure 84: Age Distribution of Staff, 2013	61
Figure 85: Faculty to Staff Ratio, 2013	61
Figure 86: Undergraduate Enrolment, 2003-2012	62
Figure 87: Undergraduate Degrees Granted, 2003-2012	62
Figure 88: Undergraduate Enrolment, Fall 2012	62
Figure 89: Undergraduate Degrees Granted, 2012	62
Figure 90: Undergraduate Students per Regular Faculty Member, 2012/13	63
Figure 91: Final Entering Grade Averages, 2007-2012	63
Figure 92: Co-op Employment, 2005-2012	63
Figure 93: Co-op Employment by Program, 2012	63
Figure 94: Co-op Employment by Location, 2005-2012	64
Figure 95: Co-op Employment by Location, 2012	64
Figure 96: Graduate Enrolment, 2003-2012	64
Figure 97: Graduate Degrees Granted, 2003-2012	64
Figure 98: Graduate Enrolment, Fall 2012	65
Figure 99: Graduate Students per T/TS Faculty, 2012/13	65
Figure 100: Graduate Degrees Granted, 2012	65
Figure 101: Graduate Degrees Granted per T/TS Faculty, 2012/13	65
Figure 102: Graduate Fiscal Support, 2012/13: PhD Students	65
Figure 103: Graduate Fiscal Support, 2012/13: Research Master's Students	65
Figure 104: Research Funds by Sector (\$millions) and per T/TS Faculty, 2005/06-2012/13	66
Figure 105: Research Funds by Sector (\$millions), 2012/13	66
Figure 106: Research Awards by Sector, 2012/13	66
Figure 107: Tri-Council Funding and NSERC Funding by Type (\$millions), 2012/13	66
Figure 108: Research Chair Holders, 2013	67
Figure 109: Women in Engineering and Architecture, 2009-2012	67
Figure 110: Women in Engineering Programs, 2012	67
Figure 111: Women in Architecture Programs, 2012	67
Figure 112: International Students, 2009-2012	68

Figure 113: International Opportunities for Undergraduate Students, 2009-201268
Figure 114: International Student Metrics, 2012.....68
Figure 115: Industry Funding by Source (\$millions), 2010/11-2012/13.....68
Figure 116: Alumni, 2009-201268
Figure 117: Funds Raised (\$millions), 2010/11-2012/13.....69
Figure 118: Campaign Progress (\$millions) to May 1, 201369
Figure 119: Space Holdings (nasm), 2006/07-2012/13.....69

I. Executive Summary

In November 2010, Waterloo Engineering initiated a comprehensive planning exercise that resulted in the second strategic academic plan for the Faculty of Engineering. Published in May 2012, *Vision 2015: Building on Excellence* presented a set of goals and strategies aimed at achieving our aspiration to be a truly world-class school of engineering.

A key element of planning in the Faculty of Engineering is our commitment to an annual assessment of our current status and a progress report on our plan. This annual review process provides an opportunity to critically examine our plans and to make changes in direction if needed. This report represents the first such progress report on our Vision 2015 plan. Sections III.A-III.K summarize our progress at the Faculty level and Section III.L includes a summary of each academic unit's progress report.

One institutional decision taken after the publication of our Vision 2015 plan has necessitated changes to various elements of the plan: In late 2012 a decision was made to reconsolidate programs offered at the University's campus in Dubai, United Arab Emirates on the main Waterloo campus. This decision brought to an end our plans related to two engineering programs offered at the Dubai campus and resulted in reductions to our student, faculty, staff and research growth projections. Various goals and strategies that related to the Dubai campus have also required reconsideration or removal. These changes are detailed throughout this progress update.

Hiring has been on track to meet our faculty and staff complement plans. In total, 31 regular faculty positions (9 of which were new positions) and 42 regular staff positions (16 of which were new) have been filled since the plan's May 2011 baseline. New faculty are increasingly supported through mentorship and development opportunities. Much of our staff hiring has been targeted to facilitate increased capacity, improved efficiency and enhanced service. Vacancies in key administrative positions have delayed progress toward goals related to internal communications and service excellence; these areas remain priorities for attention in the coming year.

We continue to meet our undergraduate targets with very high quality students. Reductions in our undergraduate targets resulting from the UAE campus closure will be offset in future through a proposed undergraduate expansion, which will introduce a second stream of our interdisciplinary mechatronics engineering program and a new program in biomedical engineering (the approval process for which is currently in progress). Close to \$4 million has been invested through the Vision 2015 Undergraduate Lab Enhancement Initiative to date, resulting in significant improvements to the undergraduate student lab experience across the Faculty. Work continues on efforts to further enhance the undergraduate experience and to increase the integration of student learning within a term (horizontally), within a program (vertically), and across programs where possible.

Our graduate student intake increased by 8% between 2011 and 2012; however, we fell slightly short of our total intake target and did not meet the target set for domestic student intake. A Graduate Recruitment Co-ordinator has been established in the Faculty of Engineering, and significant targeted recruitment efforts are underway. Consideration is also being given to a number of operational changes that could assist in meeting targets. New diplomas in advanced management and in green energy have recently been introduced and a planned professional master in mechatronics is in development. Two other planned professional master programs are yet to be developed.

In 2012/13, our external research funding exceeded \$60 million for the third consecutive year, and total research awards from peer-reviewed competitions reached a record high of 1361. Total research funding reached 89% of target and funding per tenured/tenure-stream faculty reached 92% of target. Strategies have been targeted to help maintain the stable funding required for a quality research program in light of budget declines or instability in some granting programs. This includes continuing efforts to support our researchers' pursuit of multi-year partnership programs, to develop stronger ties with industry, to improve the visibility of our research portfolio, and to increase international collaboration. Over the coming year we will increase the number and quality of nominations of our researchers to prestigious award programs and will work to strategically identify, assess and promote our research strengths.

Vision 2015 introduced an important new portfolio to our strategic and operational activities: Teaching. Over the past 18 months, we have created an Associate Dean role, a supporting office, and a group of departmental champions to foster teaching excellence among all Waterloo Engineering instructors. Enhancements have been made to the provision of teaching development opportunities for instructors and to the process of administering and analyzing student course evaluations.

To date, we have met our Vision 2015 targets for outreach activities, exceeding our targets for high school programming by a large margin. Efforts to increase the participation of women and to build an inclusive atmosphere in our Faculty have been enhanced through additional initiatives and consistent staff support resulting from an

investment through the Hydro One Women in Engineering University Partnership. The Outreach Office will collaborate with the Undergraduate Office in the coming year on an emerging area related to the success and support of international students.

Following the closure of the Dubai campus, our goals related to increasing international undergraduate intake must be moderated. We will continue to pursue opportunities to increase international opportunities for our undergraduate students and to enhance our recruitment of high-calibre international students. Over the past year, our international focus has moved toward developing strategic relationships with a targeted set of leading global universities in areas of shared research excellence.

Excellent progress has been made on our Vision 2015 goal to enhance support for entrepreneurship and innovation, and our aspirations in this area have only increased over the past 18 months. In addition to continuing to strengthen the related expertise in our Conrad Business, Entrepreneurship and Technology Centre, we are implementing new strategies to expand the reach of this expertise. Among our many successful initiatives to date, the BETS program (Bridging Entrepreneurs to Students) pilot was very successful and is being continued, connecting first-year engineering students with local start-up ventures; a number of awards and initiatives have been established to encourage and capitalize on innovation in capstone design projects; an undergraduate entrepreneurship option is under development and a graduate diploma in advanced management has recently been approved. Furthermore, our design focus for Engineering 7 aims to create spaces that will foster collaboration, integration, innovation and entrepreneurship.

Of course our Vision 2015 plan cannot be accomplished without the required resources and supports. Our Engineering Computing Office is on track to implement its plan to maintain a quality computing environment and to provide excellent computing support. Our Advancement team continues its work to support our plan priorities through philanthropic giving and enhancements to the Faculty's reputation and visibility nationally and internationally. The limitations of our physical space remain perhaps the most significant potential constraint to the achievement of our Vision 2015 goals. While we have increased our space holdings by 58% over the past seven years, we remain over 10,000 nasm short of the space required to meet our current needs and Vision 2015 growth plans. The construction of the Engineering Entrepreneurship Building (E7) remains the top space priority for the Faculty, with an immediate focus on the space plan and fundraising required to initiate its approval and construction.

Over the past 18 months, the Faculty of Engineering has made excellent progress. Under the guidance of a dedicated team of leaders, and with the excellent effort of all our students, faculty members and staff, we are working steadily toward securing our place as a world-class school of engineering.

Priorities for 2014

While our aspiration and key priorities remain unchanged from those set out in the Vision 2015 plan, the changes summarized above have necessitated reconsideration of some original plan goals. The Summary of Updated Goals, below, provides an overview of the Vision 2015 goals as amended in this update. In the coming year, we will continue working on all fronts to make progress on each of these goals. This list of priorities provides a snapshot of the highest priority items among those goals, on which we need to strategically focus to make the most progress possible this year.

- Foster entrepreneurial activity and nurture innovation
- Expand high-demand interdisciplinary undergraduate education
- Enhance the undergraduate experience and support the integration of learning
- Strategically identify, assess and promote the visibility of our areas of distinguishing research excellence
- Enhance strategic graduate student recruitment
- Build strategic relationships with targeted top-ranked global institutions in areas of common strength
- Implement the advancement plan in support of the Engineering Entrepreneurship Building (E7)

Summary of Updated Goals

- Goal A1: Increase the Faculty Complement Strategically
- Goal A2: Increase the Staff Complement to Appropriate Levels
- Goal A3: Establish a Culture of Service Excellence
- Goal A4: Improve Internal Communications
- Goal A5: Recognize and Promote Faculty and Staff Excellence
- Goal A6: Support the Career-Long Development of Faculty and Staff
- Goal A7: Fully Engage All Faculty Members
- Goal B1: Maintain Relatively Stable Undergraduate Intake Targets
- Goal B2: Enhance the Undergraduate Academic Program
- Goal B4: Improve the Undergraduate Student Experience
- Goal B5: Increase the Number of Co-op Jobs
- Goal B6: Provide Unemployed First Work Term Students a Meaningful Experience
- Goal B7: Support the Successful Implementation of WatPD-Engineering
- Goal B8: Ensure the Ongoing Accreditation of all Engineering Programs
- Goal C1: Strategically Increase Graduate Enrolment
- Goal C2: Improve Graduate Operations and Service
- Goal C3: Improve the Graduate Program
- Goal C4: Enhance the Graduate Student Experience
- Goal D1: Increase Research Funding
- Goal D2: Establish a Shared Commitment to Research Excellence
- Goal D3: Eliminate Barriers to Research Success
- Goal D4: Celebrate Research Excellence
- Goal D5: Strategically Identify and Assess Research Strengths
- Goal E1: Enhance Support for Teaching at the Faculty Level
- Goal E2: Contribute to the Development of Faculty Members and TAs as Teachers
- Goal E3: Affirm the Importance of Teaching
- Goal E4: Support Teaching Innovations and Strategies for Integrating Learning
- Goal F1: Expand the Scope of Waterloo Engineering Outreach Programs
- Goal F2: Enhance the Waterloo Engineering Community through Participation in Outreach
- Goal F3: Increase the Participation of Women in Engineering at Waterloo
- Goal F4: Build an Inclusive Atmosphere within Waterloo Engineering
- Goal G1: Increase International Undergraduate Enrolment
- Goal G2: Increase International Experience Opportunities for Undergraduates
- Goal G3: Increase International Graduate Studies and Research Collaborations
- Goal G4: Pursue Targeted Collaboration Initiatives in India
- Goal H1: Enhance Existing Supports for Entrepreneurship and Innovation
- Goal H2: Introduce New Initiatives to Foster Entrepreneurial Activity and Innovation
- Goal H3: Develop New Spaces and Infrastructure to Support Entrepreneurship and Innovation
- Goal I1: Complete a Comprehensive Update to the Existing Space Plan
- Goal I2: Create the Space Required to Meet Operational and Strategic Needs
- Goal I3: Harmonize all Aspects of Safety within the Faculty of Engineering
- Goal J1: Ensure a Quality Computing Environment
- Goal J2: Enhance Support to Computing Clients
- Goal J3: Support Improvements to Operational Efficiency and Innovation in Service Delivery
- Goal K1: Secure the Philanthropic Support Required for our Priority Initiatives
- Goal K2: Enhance the Faculty's Reputation as a World-class Leader in Engineering Research and Education

Waterloo Engineering Today

Table 1: Key Metrics: Current Values and Change from the Vision 2015 Baseline (2010/11)

Key Metric	2012/13	Change from 2010/11
Faculty	292.3	7.7%
Staff	214.8	10.6%
Undergraduate Students (FTE)	5420	7.8%
Undergraduate Students (head count)	6840	7.8%
International Undergraduate Students	703	52.2%
Female Undergraduate Students	1406	17.5%
Undergraduate Degrees Granted	1046	13.9%
Graduate Students (FTE)	1597	5.1%
Graduate Students (head count)	1945	5.5%
International Graduate Students	806	28.8%
Female Graduate Students	469	6.3%
Research Graduate Students	1404	21.8%
Graduate Degrees Granted	569	-0.7%
PhD Degrees Granted	115	22.3%
Sponsored Research Funds	\$60.5M	9.0%
Alumni	36,140	9.4%
Space Holdings (including under construction)	61,211 nasm	0.6%
Permanent Recurring Budget	\$73.1M	13.7%
Vision 2010 Campaign Progress to Date	\$96.2M	19.7%

Table 2: Key Performance Indicators: Current Values and Change from the Vision 2015 Baseline (2010/11)

Key Performance Indicator	2012/13	Change from 2010/11
Female Faculty/Total Faculty	15.1%	7.9%
Faculty/Staff	1.4	-2.9%
Undergraduate Students/Faculty	17.8	0.6%
International Undergraduates/Total Undergraduates	10.3%	41.1%
Female Undergraduates/Total Undergraduates	20.6%	9.0%
Undergraduate Degrees Granted/Faculty	3.7	5.7%
Graduate Students/Faculty	6.0	-1.6%
Research Graduate Students/Faculty	4.7	4.4%
International Graduate Students/Total Graduate Students	41.4%	22.1%
Female Graduate Students/Total Graduate Students	24.1%	0.8%
Graduate Degrees Granted/Faculty	2.1	-8.7%
PhD Degrees Granted/Faculty	0.4	0.0%
Graduate Students/Total Students	22.8%	-0.9%
Sponsored Research Funds/Faculty	\$239,899	-5.4%
Sponsored Research Funds/Permanent Recurring Budget	0.88	-12.9%
Space Holdings (including under construction)/FTE Student	9.3 nasm	-10.6%
Permanent Recurring Budget/FTE Student	\$10,418	6.0%

Waterloo Engineering in Context

Table 3: Waterloo Engineering in the Institutional Context, 2012/13

Metric	Share of University of Waterloo
Undergraduate Students (head count)	24.1%
International Undergraduate Students	20.9%
Female Undergraduate Students	11.5%
Undergraduate Degrees Granted	20.0%
Graduate Students (head count)	38.1%
International Graduate Students	52.1%
Female Graduate Students	23.2%
PhD Students	39.5%
Graduate Degrees Granted	36.9%
PhD Degrees Granted	43.1%
Regular Faculty Members	26.2%
Sponsored Research Funds	31.1%
Alumni	22.2%

Table 4: Waterloo Engineering in the Provincial and National Contexts, 2011¹

Metric	Share of Ontario	Share of Canada
Undergraduate Students (FTE)	16.4%	7.0%
International Undergraduate Students	11.6%	4.6%
Female Undergraduate Students	15.7%	6.6%
Undergraduate Degrees Granted	18.7%	8.1%
Graduate Students (FTE)	18.3%	6.8%
PhD Students (FTE)	22.1%	8.3%
International Graduate Students	25.1%	7.3%
Female Graduate Students	19.0%	7.1%
Graduate Degrees Granted	21.5%	10.4%
PhD Degrees Granted	25.1%	11.4%

Table 5: Waterloo Engineering in International University Rankings, 2013

Ranking Agency	World Rank	Canadian Rank
QS World University Rankings	46	2
Shanghai Rankings (ARWU)	43	2
Taiwan Rankings	64	2
Times Higher Education World University Rankings	67	4

In addition to our strong standing in the major international university ranking agencies' reviews of engineering fields (summarized in the table above), the University of Waterloo was ranked as the top Canadian school (in 29th place globally) in a 2012 *Business Insider* ranking of the world's best engineering schools² and was the only Canadian school listed on the 2013 *CrunchBase* list of the top 25 university programs for producing entrepreneurs³.

¹ 2011 is the most recent year for which provincial and national comparative data is available from Engineers Canada.

² <http://www.businessinsider.com/the-worlds-best-engineering-schools-2012-6>

³ <http://info.crunchbase.com/2013/08/12/entrepreneurs-and-universities/>

II. Alignment with the University of Waterloo Strategic Plan

As this update was being prepared, the University of Waterloo published its strategic plan “A Distinguished Past – A Distinctive Future.” Our Vision 2015 aspiration, key priorities, goals and strategies are entirely consistent with the directions set out in the University of Waterloo strategic plan.

Goal Alignment

The table below summarizes how the Vision 2015 goals, as presented in the summary of updated goals above, align with the University of Waterloo Strategic Plan goals.

Table 6: Alignment of Vision 2015 and University of Waterloo Strategic Plan Goals

University of Waterloo Strategic Plan Goal	Supporting Vision 2015 Goals
Experiential education for all	B5, B6, B7
A uniquely entrepreneurial university	H1, H2, H3
Transformational research	A1, A7, D1, D2, D3, D4, D5, G3
Outstanding academic programming	A1, A7, B1, B2, B3, B8, C1, C3, E1, E2, E3, E4, G1, G3
Global prominence and internationalization	G1, G2, G3, G4
Vibrant student experience	A1, A2, A3, B4, C2, C4, F2, G2, I3, J1, J2
Robust employer-staff relationship	A1, A2, A3, A4, A5, A6, F2, I3, J2, J3
Sound value system	F3, F4

Timeframe Alignment

Over the coming year, we will update our Vision 2015 plan to align with the University plan’s timeframe, extending our targets to 2018. We will review our goals and strategies and augment them as necessary to ensure a strategic roadmap is in place for the Faculty of Engineering that will maintain our excellent progress through to 2018 and fully support the core strategic directions set out in the University of Waterloo plan. The Vision 2015 plan update published in fall 2014 will summarize this work and set out our targets and extended strategies to 2018.

Accountability Alignment

An accountability document to support the University of Waterloo strategic plan is expected in the coming year. We look forward to reviewing and using the information provided therein to further refine our Vision 2015 performance measurements and metrics.

III. Vision 2015 Strategic Plan Progress Report

A. Faculty and Staff

Over the past decade, the regular faculty complement in Waterloo Engineering has grown by 51.5% (see Figure 73) and our staff complement has grown by 63% (see Figure 81). These and other data about our faculty and staff complements are presented in Section IV.A of this report.

Overall, we have made good progress on our Vision 2015 faculty and staff goals to date. It is important to note that our faculty and staff complement projections have been edited in this update to reflect changes resulting from: (a) the closure of the university’s campus in the UAE, which resulted in reduced faculty and staff complement projections; and (b) a new plan for undergraduate expansion.

Goal A1: Increase the Faculty Complement Strategically

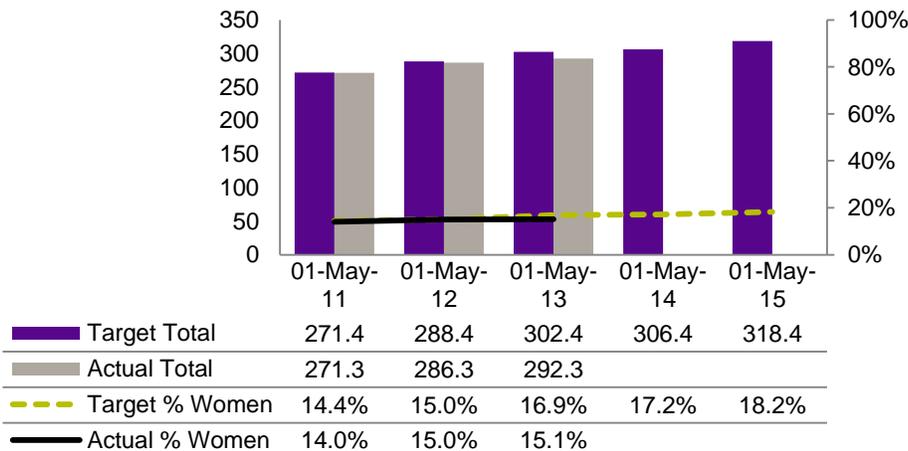
Fill all open faculty positions and establish new positions in strategic areas

- 31 regular faculty positions were filled (including 9 new positions) and 11 positions were vacated (1 retirement and 10 resignations) between May 1, 2011 and May 1, 2013. These vacancies account for the apparent performance gap in Figure 1.
- An additional 5 faculty members had accepted positions but had not yet started their appointment on May 1. Searches are also currently underway to fill 12 positions.
- The proportion of faculty who are women is below target; this is in part due to the reduction in new positions.

Recruit and hire outstanding faculty

- The increasing diversity in the distribution of our faculty complement by PhD school (see Figure 76) suggests that we are attracting a broad pool of potential faculty.
- As outlined in the Vision 2015 plan, department heads must make a case to retain positions following retirement, including consideration of how the hire can best support areas of existing and emerging strength.

Figure 1: Faculty Complement Plan Performance to Target



Goal A2: Increase the Staff Complement to Appropriate Levels

Add staff positions at appropriate levels to manage workload and support strategic initiatives

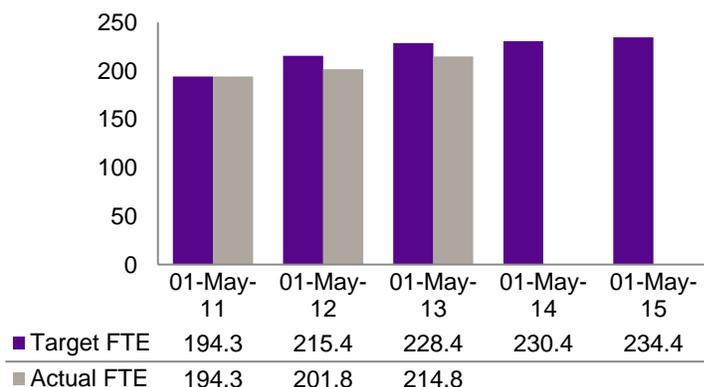
- 42 staff positions (including 16 new positions) were filled between May 1, 2011 and May 1, 2013.
- Searches are currently underway to fill 10 staff positions in the Faculty, four of which are new positions. These open positions account for much of the apparent performance gap shown in Figure 2.

Facilitate reorganization for increased capacity, improved efficiency and enhanced service

- The senior staff role of Administrative Officer has been introduced to provide enhanced human resource and financial expertise to chairs/directors in seven of our academic units.

- Three positions are being created (one is filled) in the undergraduate and graduate offices to enhance client service and two positions are being created (one is filled) to meet graduate student recruitment and research support priorities.

Figure 2: Staff Complement Plan Performance to Target



Goal A3: Establish a Culture of Service Excellence

- New strategies to better communicate with and support our clients include improvements in computing (increased help desk hours and introduction of a single point of contact); the undergraduate office (staff reorganization and increased office hours); and the research office (providing support for proposal preparation and completion of the new common CV).
- Staffing changes in the Dean of Engineering Office have constrained the leadership and resources available to this priority. This area will be further considered by the Dean's Staff Advisory Committee in 2013/14.

Goal A4: Improve Internal Communications

- This priority will move forward in the coming year under the leadership of the recently hired Associate Director, Marketing and Communications.

Goal A5: Recognize and Promote Faculty and Staff Excellence

- The Engineering Awards and Honours Committee has been renewed, including terms of reference and shared information resources. The committee will begin meeting on a regular schedule in fall 2013, supported by an Engineering Research Office staff member for project management and nomination review/editing.
- Early indicators suggest that our renewed efforts to actively nominate faculty members have successfully increased the number of awards and honours earned.

Goal A6: Support the Career-Long Development of Faculty and Staff

Identify and promote development opportunities for faculty and staff

- The Engineering Research Office has hosted workshops on NSERC Strategic Grants and Early Researcher Awards, and has plans to expand such offerings in the coming years (including proposal writing sessions for junior faculty). The Associate Dean Teaching has provided/co-hosted workshops on reviewing student feedback, reviewing demonstration lectures, and instructional skills.
- Practices related to staff professional development vary across units. A review of these, aimed at identifying best practices, is yet needed.

Establish a culture of mentorship

- The vast majority of new faculty members have an informal mentor in their department. Some also have a formal mentor and very few have no mentor. In CEE, most new faculty members have a formal mentor.
- Additionally, mentorship specific to teaching is provided through the Associate Dean Teaching and the departmental teaching champions.

Goal A7: Fully Engage All Faculty Members

- Starting in early 2014, data will be collected and tracked over time to better understand variances in faculty activity levels (teaching loads, graduate supervision, design project supervision).

B. Undergraduate Studies

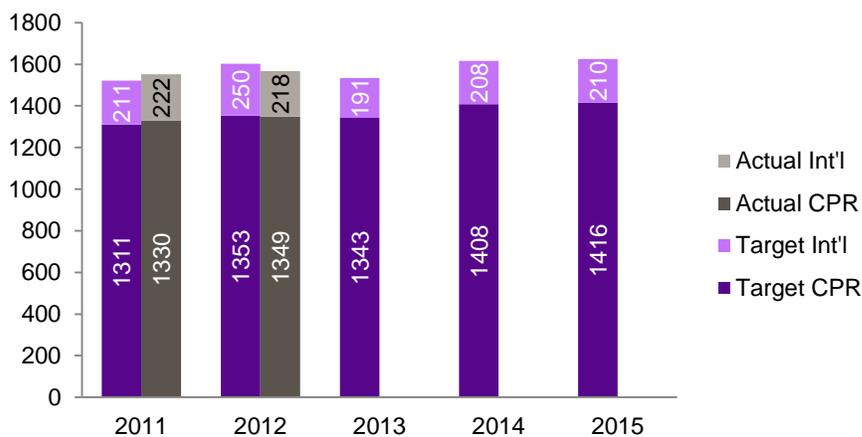
Section IV.B provides historical trends and current-year information on our undergraduate students, including substantial enrolment growth (49% in the past 10 years) and the continuing exceptional quality of our incoming classes, as measured by their high school grade averages (see Figure 91).

We have made strong progress on many of our Vision 2015 undergraduate studies goals. Of note, our undergraduate intake plan has changed since establishing our original Vision 2015 targets. As a result of the closure of the university's campus in the UAE (see the International section of this report), our intake targets – especially those for international students - have declined commensurate with the planned civil and chemical engineering cohorts that were to start their studies at the UAE campus. This decline will be offset, in part, by a planned undergraduate expansion comprised of the introduction of a new program in biomedical engineering (discussed in depth in the Systems Design Engineering update in Section L of this report) concurrently with the expansion of our existing mechatronics engineering program.

Goal B1: Maintain Relatively Stable Undergraduate Intake Targets

- The intake plan targets outlined in Figure 3 have been edited in this update to remove planned intake in civil and chemical engineering at the UAE campus and to reflect additional intake in mechatronics engineering and in a proposed new program in biomedical engineering. This growth, currently projected to begin in fall 2014, is dependent on final approvals for the new program and related space.
- Our apparent shortfall to target in 2012 was concentrated in the international target, in part related to lower-than-projected intake into programs offered at the University's UAE campus in its final year of operation.
- An important new strategy for the Engineering Undergraduate Office (EUGO) is to focus on international recruitment (discussed more fully under goal G1 of the International section of this report), along with ongoing efforts to review the success of international students in engineering.

Figure 3: Undergraduate Intake Plan Performance to Target



Goal B2: Enhance the Undergraduate Academic Program

Foster consistently high quality teaching by all instructors

- Our progress toward this goal is covered in the Teaching section of this report.

Redesign and modernize the lab experience

- Many departments are moving forward with changes to labs, for example:
 - MME has continued preparation toward its planned pilot of an Engineering Clinic.
 - SDE has completely redesigned the laboratory content for its three core lab courses.
 - A pilot 1A Mechatronics Integration Project (described below) was run in fall 2012.

Ensure a modern, high-quality learning environment

- In 2011/12 and 2012/13, a total of \$3.8 million has been invested from the Vision 2015 Undergraduate Lab Enhancement Initiative. These investments have directly impacted 87 unique lab courses and 20 computing rooms/labs, as well as the Student Design Centre and student design teams. While it is impossible to catalogue all the impacts of these investments here, some highlights include:
 - Over \$930,000 was invested to completely renovate the WEEF lab (a multipurpose lab used by all first-year engineering programs) in 2012/13. The renovation, which included state-of-the-art audio-visual equipment, electrical lab equipment, computers and furniture, has significantly improved the first-year learning environment. In addition to 140 computer workstations and 70 electrical lab work benches, the WEEF lab now also includes two smaller seminar-like rooms for use by groups. In 2013/14, students in 13 courses will benefit from this improved learning environment.
 - Additional and upgraded computer labs, at both the Department and Faculty level, provide students with more study space and resources, an improved computing environment and better use of space for collaboration.
 - Investments in new equipment have facilitated significant lab content and delivery innovations. Across the Faculty, new labs and experiments have been developed to capitalize on new technology and instruments. A significant number of these changes have focused on better engaging students, enhancing hands-on content, providing students experience with up-to-date tools, and increasing the number of open-ended projects.
- Our departments also report that over \$400,000 in additional expenditures from various sources, including Faculty and Department funds and WEEF donations, have been allocated to improve the undergraduate lab experience across the Faculty over the past two fiscal years.

Introduce a unique learning environment to Waterloo Engineering

- The Engineering Ideas Clinic, a new 1000-nasm teaching facility to be included in the planned Engineering 7 building, will provide teaching space to instructors who want to integrate content from different courses within a term (horizontally) or within a program (vertically), and wherever possible to enable students from two or more programs to work on scheduled design-build/diagnostic projects.
- The Ideas Clinic will provide the necessary environment to expand into new creative formats and approaches to teaching in all engineering streams.
- The Ideas Clinic will provide support for building capstone design projects and will foster entrepreneurship opportunities.
- An Ideas Clinic Team, representative of all engineering programs, was struck in fall 2013 to collaboratively contribute to the design and usage plan for this innovative new space.

Enrich student understanding of the curriculum structure and relevance

- Going forward, the Engineering Ideas Clinic will enable diagnostic projects that will allow students to reflect on the core curriculum.
- In fall 2012 we piloted a 1A Mechatronics Integration Project, involving all first-year mechatronics students in three courses: in MTE 100, engineering clinics including engine dissection and keychain fabrication were presented; LEGO MindStorm robots were used in a joint mechanical design and programming assignment shared between MTE 100 and GENE 121; and a joint fuel cell car project ran between CHE 102 and MTE 100. The students appeared to be engaged in the learning process and enjoyed the integration activities. A tighter coupling of these courses, possibly including the Math courses, is planned for the future.

Enhance first-year student success

- As described above, the improvements made to the WEEF lab will result in substantial improvement to the learning environment and academic experience of engineering first-year students. In addition to teaching, the lab is used in the evenings to run first-year engineering help sessions.
- The tutor centre was completed early in the fall 2013 term. It includes a small teaching area, individual tutoring areas and a computer tutoring area. We will focus in coming terms on ensuring its effective use.
- There has also been progress on a number of the recommendations described in the Engineering Education for Enduring Success report. Noted changes in the past year include:
 - As noted above, Mechatronics has made major progress in course redevelopment.
 - Life skills have been added to CEE's concepts course in the past year and there is recent development in the ECE concept course as well. A voluntary three-hour presentation on topics such as study skills, time management, life balance, exam preparation and anxiety is also provided.

- Supported Learning Group (SLG) tutoring, to promote self-regulated and mastery-motivated learning, has been introduced in CHE 102. There has been a noted performance improvement in CHE 102 at midterm time but it is too early to confirm a direct link to SLG.
- WEEF TA training is now offered through a customized Expectations program in fall term and ongoing training sessions in winter and spring terms.
- To support first-year students at the department level, Management Sciences has hired a retired professor as an advisor to first-year and second-year students and Electrical & Computer Engineering is creating two lecturer positions to support 1A engagement initiatives.
- The pilot reduced-load program (available to students who started in 2010) was repeated for a third time during spring 2013 for the class that entered in 2012. Because there are multiple pathways into this program (some students voluntarily opt to enter while others choose to enter after an academic problem), it is difficult to track students in the program precisely. Furthermore, because the program is very new it is simply too early for meaningful measures of success. However, some early indicators we can observe to date include:
 - One surrogate that overestimates the students who opt for the recovery program is the number of students who take the university skills course (GENE 199 or GENE 101). To date 149 students have taken this course (29 in spring 2011; 64 in spring 2012; 56 in spring 2013).
 - Initial results based on tracking students from their first reduced load term (either fall or spring, for those who failed in the preceding fall term) to their results at the end of 1B indicate that about 40% of those students who opt for the reduced load program are successful at the end of their (expected) 1B term.

Support student success at all levels

- Interaction with the University's Student Success Office (SSO) has been fairly limited over the past year. With a recent leadership change in the SSO, interest in improving the connections between the Faculty of Engineering and the SSO has been renewed. We will maintain our commitment to fostering success through strategic support where it can be most effective, at the Faculty level.
- In parallel with the work of the campus working group on English language support, the Faculty Operations Committee has recently started to develop an improved model for English support in Engineering. These efforts are still in very early stages, and more information should be available at our next annual plan update. Additionally, in fall 2013 about a dozen engineering students were admitted to the University's pilot Bridge to Academic Success in English initiative; if successful, these students will be in first-year ECE in fall 2014.
- The Associate Dean, Undergraduate Studies has developed extensive data related to the number and fraction of students who continued in engineering studies from one September to the next, as well as those able to progress on their degree. First shared with the Engineering Planning Committee, these helpful data require further work to make the information more accessible. Concurrently, institutional efforts to refine a central data tool to report on retention at a level meaningful to Faculties and programs continue.
- A new consideration that will require future action relates to how we can best attend to student loading in 1A in the face of concurrent requirements to add items to first year. While these various items (addressing such issues as English language competency, safety, diversity and academic integrity) are justified and important, we are faced with the challenge of how to restructure our programs so that any change required to address these emerging issues will not result in increased student time in 1A.

Goal B4: Improve the Undergraduate Student Experience

Improve service and communications

- Starting in October 2012, the Engineering Undergraduate Office hours of operation were expanded to include lunch hours. This has resulted in more access time for students and an increased ability to answer questions.
- We have introduced an email request line, Engineering Undergrad Ask Us (eng.ug.askus@uwaterloo.ca). Efforts in the coming year will include advertising this service to increase awareness among potential users.
- The undergraduate office has moved toward perceiving itself as an Engineering Student Services Office. Challenges to date in using the related acronym necessitate further work to extend this more broadly.
- The Engineering Undergraduate Advisors Committee met for the first time in May 2012 and has met approximately once a term since. These meetings include staff advisors from each program/department, discussing topics such as advisement templates, dealing with students in distress, safety, and CECA.

Enhance undergraduate processes

- An interdisciplinary design project has been developed and implemented in the calendar but has not yet been offered to students.
- The definition of specializations has been developed and implemented; however, to date no program has opted to use the specialization designation. This implementation included a review of the number of students in a given specialization. The option study has not yet been started.
- The efforts toward introducing partial load promotion rules continue, but are making slow progress.
- Some work has started on the changes to the exchange process, including surveys of students' experience. However, with changes at the Waterloo International Office, progress has been limited.

Develop an annual student engagement survey

- The first engineering student engagement survey was implemented in 2012, jointly with the Engineering Student Relations Officer. Various results have been used by the Associate Dean, Outreach and others.
- The near-term focus must be to determine the appropriate office to implement the survey in a sustainable manner. Consideration will also be given to if or how this survey should interact with any other student surveys implemented within the Faculty.

Co-operative Education

While we do not set targets for co-operative education work terms filled, Figure 92 shows our progress in this domain over the past eight years. In 2012, the number of required work terms reached an all-time high of 7686; almost 2000 work terms (or 35%) more than the number required in 2005. Despite this substantial increase, we maintain excellent employment rates: In 2012, the overall employment rate was 96.5%. We meet our ongoing commitment to co-operative education as a cornerstone of the Waterloo Engineering undergraduate program through a number of operational efforts and strategic priorities.

Goal B5: Increase the Number of Co-op Jobs

Implement a program-focused initiative to assist in job development

- A pilot program was completed with chemical engineering, which no longer has the lowest first-year employment rates and is now performing near the first-year average. This activity is ongoing for nanotechnology and management engineering. In the next year we will focus on mechanical and mechatronics engineering.

Introduce two-term jobs for junior students

- There has been no formal activity on this item to date, and CECA will not be able to dedicate resources to this initiative in the next year. We will continue to monitor the number of first-work term students returning for second work terms with the same employer.

Introduce eight-month work terms for senior students

- On the basis of relatively limited uptake of this program by students or employers during the pilot projects (which ran in three departments), it has been decided to pursue this initiative in a more informal manner. We will continue to monitor the number of eight-month work terms going forward.

Develop additional international work term opportunities

- This strategy is reported in Goal G2 of the Internationalization section of this report.

Goal B6: Provide Unemployed First Work Term Students a Meaningful Experience

Develop a program to enhance the employability of unemployed first work term students during their next work term

- The BETS (Bridging Entrepreneurs to Students) program was successfully piloted and is continuing. See Goal H2 in the Entrepreneurship section for more details.

Goal B7: Support the Successful Implementation of WatPD-Engineering

Ensure sufficient selection of current WatPD courses for engineering students

- One new WatPD elective course (Professionalism and Ethics, first offered in winter 2013) has been sponsored by the WatPD Eng curriculum committee. A second course on Process Safety is on hold until a Faculty-wide initiative to examine safety in the curriculum has been completed.

Establish a framework to assess the WatPD-Engineering program's effectiveness

- Data on student success and satisfaction is being gathered following WatPD practices. The need for additional assessment will be evaluated in the next year.

Accreditation

All 12 engineering programs are preparing for an accreditation site visit in fall 2013. A major activity over the last year has been the implementation of a process for assessment of outcomes for the purposes of program improvement, required for accreditation starting in 2014.

Goal B8: Ensure the Ongoing Accreditation of all Engineering Programs

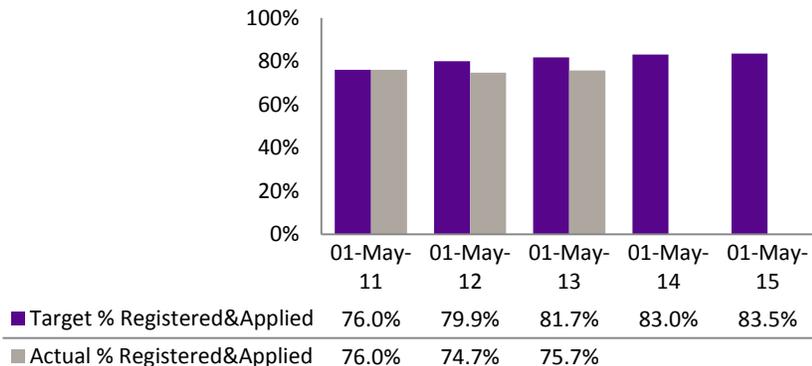
Implement a system of outcomes assessment for all programs

- A system that involves assessing 4 outcomes per year has been established: All outcomes will be assessed every 3 years and there will be 2 assessments per accreditation cycle. Initially assessments will be conducted on students that are near graduation. Subsequent detailed assessments will be conducted where performance is found to be less than desired. We plan to maximize use of co-op employer evaluations for assessment.

Increase the proportion of eligible faculty members who are licensed professional engineers

- We continue to encourage and support the registration of faculty members as PEng through our Co-operative Education and Professional Affairs Office. This has been somewhat challenged by current PEO practices that do not recognize university research as providing practical experience. In the coming year we will advise faculty members with limited non-university experience to apply for Limited Licenses.
- Figure 4 shows that we are somewhat behind targets for faculty applied and registered as PEng.

Figure 4: Regular Faculty PEng Status Performance to Target



C. Graduate Studies

Over the past decade, our graduate enrolment has increased by just over 54% (see Figure 96). Details of this and other data points about our graduate students are presented in Section IV.C.

Steps have been taken toward many key Vision 2015 graduate studies goals. Additionally, progress on our research goals (see Section D) also reflects on our graduate studies portfolio because graduate students are the heart of our research programs. It is important to note that graduate intake targets have been edited in this update to reflect changes in our faculty complement plan, outlined in the Faculty and Staff section above, and to better reflect our experience related to the prospective graduate student pool in recent years.

Goal C1: Strategically Increase Graduate Enrolment

- As shown in Figure 5, graduate intake increased by 60 students or 8% between 2011 and 2012. Despite this growth we fell slightly short of target in 2012.
- Figure 6 indicates that in 2011 we exceeded target for PhD students but fell short of master's students. In 2012, our PhD intake declined while intake into both master's programs increased. However, only the professional master program met its intake target in 2012.
- The Vision 2015 goal to target increases primarily to domestic students so as to decrease the proportion of international students has proven unattainable to date. Targeted recruitment efforts are underway and consideration is being given to operational changes that could assist in meeting this goal. Many academic units have adjusted their targets to moderate their expectations for Canadian and Permanent Resident (CPR) intake (as reflected in Figure 5).

Figure 5: Graduate Intake Plan Performance to Target by Visa Status

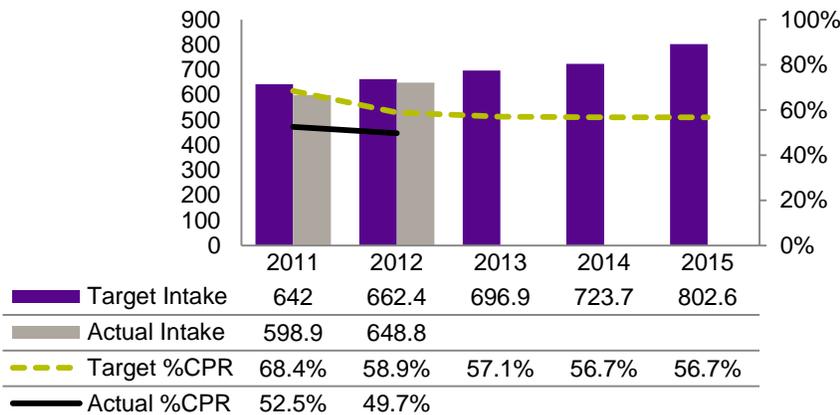
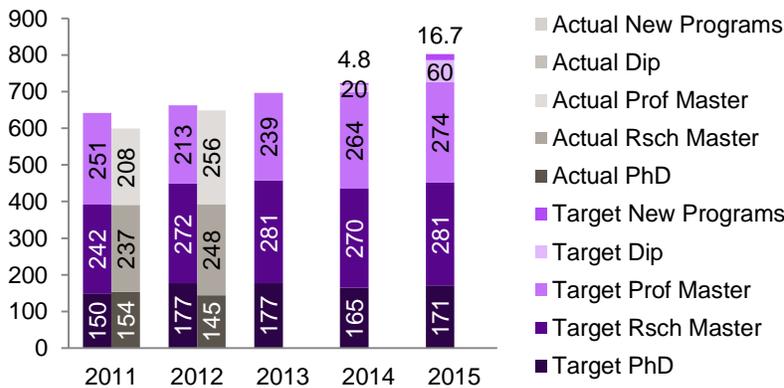


Figure 6: Graduate Intake Plan Performance to Target by Program Type



Introduce new graduate programs in areas of strength

- Conrad's Diploma in Advanced Management has recently received provincial approval, as has an MME Diploma in Green Energy which was not included in the original Vision 2015 plan.
- The MEng in Mechatronics (MME) is being refined in response to feedback during the approval process.
- Conrad's two new professional master's programs have not yet been developed.

Enhance the professional master's program

- MME is offering some courses, notably in the Green Energy program, online through the LiveLink classrooms.
- Conrad will offer its new Diploma in Advanced Management to all professional master's students this fall.

Develop and implement a strategic recruitment plan for graduate studies

- As noted in the Advancement section of this report, a graduate recruitment specialist has been hired and a number of recruitment efforts have been undertaken, including a co-ordinated effort with four peer institutions to raise national awareness of the need for engineers with post-graduate degrees.
- While it is too early to measure the effect of this new position on graduate applications or admissions, one positive indicator is the considerable interest that graduate recruitment events have generated from students.

Goal C2: Improve Graduate Operations and Service

Provide excellent service to all clients

- A job description is currently being developed for the planned additional Engineering Graduate Studies Office (EGSO) staff position, which will provide the capacity required to help meet this goal.

Improve the quality and delivery of information

- We are aiming to have an updated Graduate Studies Manual ready for online publication by the end of 2013.
- Steps have been taken in a continuing effort to identify where changes can be made to improve processes.
- Efforts will be made to encourage the development and updating of policy and procedures manuals across all levels, to help protect against the loss of experience and knowledge that results from personnel turnover.

Ensure timely processing of applications and admission correspondence

- New application deadlines for research-based programs (February 1 for fall admission) have been established. This deadline has been moved earlier to better coincide with the allocation of Tri-council and OGS scholarships and is more consistent with other Ontario universities.
- Procedures are being implemented to streamline application processing timelines with the goal of being able to make an admission decision with a two-month period. Strategies to address the workload challenges of processing more than 2000 applications across the Faculty in a compressed time frame are being developed.
- The downloading of the adjudication of master's-level scholarships from provincial and federal granting agencies to universities has necessitated significant changes and additional workload at all levels related to scholarship adjudication and the recruitment and admissions processes. Managing this process is a key priority for 2013/2014.

Goal C3: Improve the Graduate Program

Foster consistently high quality graduate student supervision

- Engineering faculty members, especially new faculty members, have been made aware of the online resource "A Guide for Graduate Research and Supervision at the University of Waterloo," developed by the university's Graduate Studies Office.
- Progress is yet to be made on developing Engineering-specific workshops or an expectations document related to graduate student supervision.
- Development of a Waterloo Engineering Award of Excellence in Graduate Student Supervision remains a priority, but has not yet been implemented.

Improve graduate course offerings

- The range of graduate course offerings has continued to improve through the introduction of new courses and renewal of others. However, this level of improvement does not appear to be uniform across departments.
- Efforts will continue to collaborate with departments to seek ways to increase the number of graduate courses offered; to minimize duplication of courses offered by different departments; and to review courses, particularly those with consistently low enrolments, for relevance.

Increase the academic rigour of graduate programs

- The Associate Dean will form a task force early in 2014 to review and evaluate the existing PhD comprehensive exam format and to develop recommendations for changes as required.

- An analysis of trends related to time required to complete the comprehensive exam is currently underway. The outcome of this study will inform messaging that will be sent to departments regarding the enforcing of existing deadlines.
- The adoption of timeline requirements for the completion of required coursework is under consideration.

Improve the quality of students admitted to graduate programs

- The use of GRE scores as a mechanism to more efficiently and effectively identify the top quality international applicants for priority processing is being explored. GRE scores could also provide another measure of an applicant's academic abilities and a more objective means of comparison across institutions.

Goal C4: Enhance the Graduate Student Experience

Evaluate current graduate student funding

- Increases to the minimum levels of guaranteed funding for full-time research graduate students have been approved, and strategies to effectively communicate the actual level of funding that research graduate students receive (which is typically higher than the guaranteed minimum level) are being investigated.
- Strategies to improve the level of funding (and/or provide a subsidy to faculty members) for domestic PhD students are being investigated.
- In the coming year, graduate funding analysis efforts to date will be reviewed and action planned based on those findings.

Attend to graduate student space needs

- Departments have been active in improving the quality and amount of space for graduate students. Nevertheless, departments still report inadequate office space for graduate students.
- The planned new computer lab for MEng students has been opened (see Goal J1).

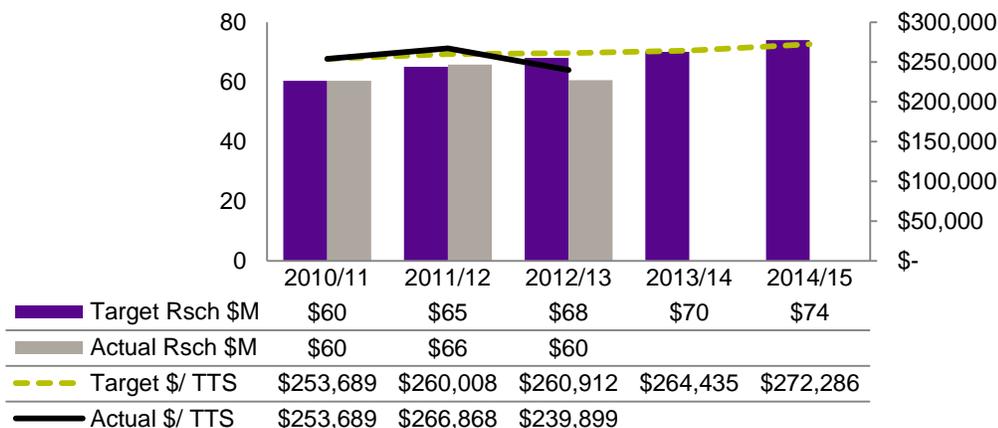
D. Research

In 2012/13, the Faculty of Engineering earned \$60.5 million in research funding and our total award count reached a record high of 1361 (see Figure 105 and Figure 106 in Section IV.B). While our total funding decreased over the previous year by about 8%, our total awards granted increased by approximately 11%. Budget cuts and the resulting lack of calls for proposals from a number of key provincial and federal programs have created new challenges in securing funds for research and related infrastructure. New initiatives for industrial and international partnerships are enabling us to develop research collaborations in strategic areas, and we continue to strive to eliminate barriers to research success.

Goal D1: Increase Research Funding

- Our research funding targets to 2014/15 have been updated to reflect the changes in our faculty complement plan, outlined in the Faculty and Staff section, and take into consideration uncertainties related to several key programs including Ontario Research Fund (ORF).
- For the third year in a row, our research funding has exceeded \$60M. As shown in Figure 7, our total research funding of \$60.5 million in 2012/13 is approximately 89% of target and funding per tenured/tenure-stream faculty, almost \$240,000, is at 92% of target.
- Compared to the previous year, our Tri-agency funding has increased by \$1.8 million or over 11% (see Figure 104). Funding from ORF and CFI decreased in the same time frame, largely due to the reduced budget available to those programs.
- Stable funding is crucial for conducting quality research. Over the coming years we will encourage and support our researchers to pursue large multi-year partnership programs like NCE and CREATE.

Figure 7: Research Funding Performance to Target



Goal D2: Establish a Shared Commitment to Research Excellence

Support and motivate increased research activity

- The Engineering Research Office (ERO) proactively builds relationships with funding agencies, potential sponsors and other stakeholders to maximize the possibility of increasing research partnerships.
- The ERO distributes research program announcements to ensure faculty are aware of relevant opportunities.

Support the development of faculty members as researchers

- Researchers are provided the opportunity to have their grant applications reviewed by ERO staff.
- Workshops organized by the ERO for Discovery Grant, Strategic Grant and Early Researcher Award programs provide guidance to faculty on grant application preparation.
- An internal review committee was struck to provide feedback on applications to the Research Tools and Infrastructure program.
- A future priority is to organize information sessions by funding organizations to provide details about their new programs to Waterloo Engineering researchers.
- Development efforts will focus on providing proposal-writing workshops and support to new junior faculty.

Develop stronger ties with industry

- Meetings with large and small companies have been held on- and off-campus, to discuss industrial challenges that can be addressed through research.
- The ERO shares Waterloo Engineering research with broader audiences through conferences such as OCE Discovery and Communitech Tech Leadership.
- We actively collaborate with the university’s Industry Liaison Officers and Centre for Career Action to raise awareness and visibility of our research strengths.
- A priority for the coming year is to update and improve the ERO database of researcher expertise to help companies easily find researchers relevant to their specific needs.

Increase international collaboration

- As described in Goal G3 of the Internationalization section, below, our current international focus is on establishing strategic research partnerships with a targeted set of leading global universities. We also fully engage in institutional programs through Waterloo International.

Goal D3: Eliminate Barriers to Research Success

Ensure a culture of collaboration and co-operation

- Several Senate-approved research centres have been renewed in the past year, including the Centre for Advanced Trenchless Technology, the Waterloo Institute for Sustainable Energy, and the Waterloo Institute for Nanotechnology.

- Researchers from engineering comprise 63% of the Waterloo Institute for Nanotechnology, 77% of the Waterloo Institute for Sustainable Energy, and 31% of the Water Institute.
- Based on our identified areas of research strength (see Goal D5), the ERO will foster strong interdisciplinary research, collaborating with academic units to seek external partnerships and identify funding opportunities.

Improve client service

- In 2013, the ERO arranged assistance for engineering researchers completing the new Common CV system. Feedback from professors who utilized this service was very positive.
- The ERO offers researchers grant application review services and arranges technical writing support for large initiatives (e.g. CREATE, NCE, and APC).
- Going forward, attendance at ERO workshops and other events will be tracked and feedback solicited about the workshops to gauge how their format, frequency or content can be improved over time.

Goal D4: Celebrate Research Excellence

Recognize research excellence

- Plans to enhance support for nominations to prestigious awards are outlined in Goal A5 in the Faculty and Staff section, above.
- Over the past year, we have put forward nominations for Killam Research Fellowships (2), the Killam Prize (1), Steacie Fellowships (3), and NSERC Synergy Awards (2).

Increase public awareness of research strengths and achievements

- Waterloo researchers have been featured in internal and external media more than 18 times in the past year.
- Waterloo Engineering research stories are being featured on social media channels, including the Waterloo Engineering Facebook page, @waterlooENG Twitter account, and some research institute Twitter accounts.
- The annual “WE Innovate” event in November 2012 allowed graduate students and professors to display their research through posters and demos to more than 60 companies in attendance.
- Future priorities include working with academic units, research centres and institutes, the engineering marketing and communications team, and the university communications and community relations teams to further build visibility for Waterloo engineering researchers through brand effectiveness, feature stories, news items, announcements and speaking opportunities.

Goal D5: Strategically Identify and Assess Research Strengths

- In the coming year we will build a process through which the Faculty can identify and assess its areas of distinguishing excellence in research, to provide strategic focus to future research initiatives and to enhance visibility. To that end, we will consider our research activity and capacity:
 - to identify enabling areas that would align with future impactful technologies.
 - in a disciplinary context, to identify existing and emerging areas where our research is well aligned to meet a societal challenge or professional need.
 - in a peer context, to identify areas in which we have a critical mass of expertise, unique or leading-edge research facilities, and/or a capacity to translate results into high-impact solutions and applications.
 - in the institutional context, to identify areas of strong alignment with the University’s strategic research objectives.
 - in the Canadian context, to identify areas of highest responsiveness to the nation’s socioeconomic needs. The recent University of Waterloo Economic Impact Study conducted by PricewaterhouseCoopers points to demonstrated impact within the region and province in the areas of information and communications technology, clean technology, advanced manufacturing, life sciences, and digital media. The Faculty of Engineering has played a major role in driving these areas.

E. Teaching

A significant number of advances have been made since our establishment of an Associate Dean, Teaching portfolio, unique within the University of Waterloo, in May 2012.

Goal E1: Enhance Support for Teaching at the Faculty Level

- Professor Gordon Stubley became the inaugural Associate Dean, Teaching in May 2012 and an office (comprised of the Associate Dean and an Assistant) has been established to support this critical portfolio.
- A committee of department “teaching champions” has been established, with mandates set by each unit.
- In the coming year, attention will move toward further development and support of the teaching champions. The group will meet monthly to build a shared sense of vision and leadership as well as to share mandates and practices. Each member will also receive support directly from the Associate Dean.

Goal E2: Contribute to the Development of Faculty Members and TAs as Teachers

Establish minimum teaching development expectations for all new faculty members

- Since March 2012 all appointment letters for regular faculty positions contain an explicit statement on the importance of our teaching mandate and the expectation that all new faculty will develop a “learning about teaching” plan and that those without equivalent experience will complete a set of four workshops offered by the Centre for Teaching Excellence (who are our learners; classroom dynamics and engagement; assessment for learning; and course design fundamentals). Sufficient mechanisms are not yet in place to ensure these obligations are met by each new faculty member.
- In the coming year, the Associate Dean and Engineering Teaching Office will: proactively connect with new faculty members and their department heads about teaching development plans and training obligations; implement and maintain a mechanism to track student course evaluation summaries for all probationary faculty members; and develop a written statement for the expectations of adequate teaching in the Faculty for use by the Dean and heads of academic units when inadequate teaching is recognized.

Promote opportunities for all instructors to learn more about teaching over their career

- We have improved access to the Instructional Skills Workshop (ISW) through the Associate Dean, who completed ISW facilitator training and subsequently co-facilitated two sessions that included five engineering instructors.
- Engineering faculty participation was promoted in the university’s annual teaching conference “Opportunities and New Directions” (30 Engineering participants) and the Teaching Excellence Academy workshop (3 participants and 1 faculty mentor from Engineering).
- The Associate Dean developed and offered a series of workshops on issues associated with developing understanding of teaching/learning effectiveness. 53 instructors have attended at least one of eight sessions (reviewing student course evaluation feedback; reviewing teaching demonstration lectures; threshold concepts; aggregate data from student course evaluations; teaching styles; learning styles; and promoting student motivation).
- Engineering Teaching Development community pages were developed in LEARN for interested instructors.
- The TA training workshop, ExpectATions, was reviewed and a model for a revised workshop is to be tested by the First Year Engineering Office training of WEEF TAs in fall 2013.

Provide mentorship in teaching

- In the first instance, departmental teaching champions provide mentorship to their department colleagues. Additionally, the Associate Dean has personally met with eight instructors to date.
- A significant priority for the upcoming year will be to provide support and mentoring to new faculty, through meaningful connections by email, through LEARN, and in person (including an informal lunch meeting to share issues and to identify supports).

Goal E3: Affirm the Importance of Teaching

Include an assessment of teaching potential when hiring new faculty

- A workshop was developed to assist departments in reviewing demonstration lectures (see Goal E2 above).

Measure teaching quality and outcomes for individual and institutional improvement

- The Engineering Teaching Office assumed responsibility for administering student course evaluations beginning in fall 2012, and is working to improve the related processes and provide analytical insights to the resulting data. The web portal and standard reporting in tenure and promotion presentations were both revised to include standard aggregate properties.
- A plan has been developed for a standard exit survey by all undergraduate programs, starting in 2014.

Recognize and reward excellence in teaching

- The Engineering Teaching Office assumed responsibility for administering the Sanford Fleming Foundation Teaching Excellence Awards and instituted a Waterloo Engineering Award for Teaching Assistantship in Architecture (funded by the Dean of Engineering).
- Support has been provided to Distinguished Teaching Award nominations of our faculty members.

Communicate commitment to the Faculty's teaching mandate

- This new strategy is under development, through a teaching webpage within the Faculty of Engineering space and through efforts, in co-operation with University Teaching Fellows, to encourage a more dominant role for the importance of teaching in university promotional materials.

Goal E4: Support Teaching Innovations and Strategies for Integrating Learning

This new goal reflects an emerging priority for the Faculty of Engineering, and strategies are under development to identify existing best practices within the Faculty and to encourage and support related departmental efforts.

Provide knowledge on the challenges and potential of deep and integrative learning

- Some existing models and theories of deep learning have been shared with the Engineering Planning Committee, and support has been provided to the CTE lunch time seminar series on integrative learning.

Support teaching innovations and curriculum renewal

- The Associate Dean will encourage academic leadership and teaching champions to consider teaching innovation and to prioritize the integration of learning in any future curriculum renewal efforts.
- The planned Engineering Ideas Clinic (described under Goal B2 in the Undergraduate Studies section of this report) will provide an exceptional platform to develop and pilot teaching innovations targeted at helping students integrate their engineering learning and reflect on the core curriculum. The Associate Dean, Teaching will provide support as required to the identification, achievement, and measurement of learning outcomes for the activities planned for this innovative space.

F. Outreach

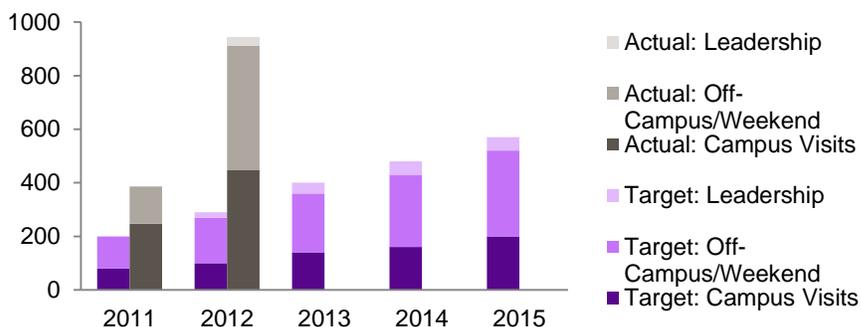
We have reached all of our Vision 2015 outreach targets to date, surpassing targets for high school programming by a large margin. Although the First Lego League program is no longer run from our office, we continue to meet our elementary school outreach targets.

Goal F1: Expand the Scope of Waterloo Engineering Outreach Programs

Expand outreach activities to include high school programming

- As shown in Figure 8, we have significantly exceeded our original Vision 2015 targets for expanded high school outreach programming. With the creation of a dedicated high school programming co-ordinator role, progress was accelerated. We will be re-evaluating these targets in fall 2013.
- Over the past two years we have partnered with other programs on campus that target this audience.

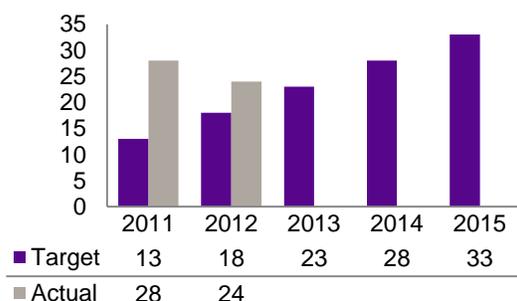
Figure 8: High School Programming Performance to Target



Increase the breadth of Kitchener-Waterloo school engagement

- Figure 9 shows we have also exceeded targets for the number of local schools reached with ESQ workshops.
- In 2011, we used a targeted approach to school outreach through the BlackBerry Science Made Simple day. In 2012/13, a labour dispute in the majority of Kitchener-Waterloo schools resulted in a decrease in bookings. Further ramifications from this dispute might also be seen in the 2013 performance as well.

Figure 9: ESQ Workshop Participation Performance to Target



Goal F2: Enhance the Waterloo Engineering Community through Participation in Outreach

Engage current Waterloo Engineering community members in outreach activities

- The most significant programs for faculty involvement remain ESQ camp visits and Explorations.
- Between 2011 and 2012, faculty participation decreased by 50% while staff and student involvement increased. A key priority for development is to increase faculty interest in showing spaces to groups of a younger age.

Diversity

Section IV.E of this report provides information about the current representation of women in our engineering programs and architecture.

The Women in Engineering (WiE) committee and outreach office have made progress on all of our goals related to diversity. In fall 2012 we introduced a Women in Engineering Co-ordinator role and in early 2013 Waterloo Engineering was selected by Hydro One to be one of four universities to participate in a “Women in Engineering University Partnership.” These developments have allowed us to introduce new initiatives to get girls excited about science and engineering (for example, a girls club program and a new ESQ technology camp for younger age groups); to enhance the success of women undergraduate students; and to support female engineering graduates transitioning to the workforce. Furthermore, in July 2013 our Associate Dean, Outreach was appointed the inaugural Ontario Network of Women in Engineering (ONWiE) Chair, charged with working collaboratively with the province’s schools of engineering to elevate the role of women in engineering.

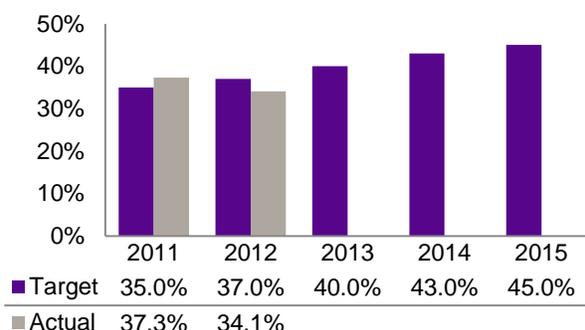
An additional area for attention appears to be emerging related to the success and support of international students. The Outreach Office is collaborating with the Associate Dean, Undergraduate Studies on this.

Goal F3: Increase the Participation of Women in Engineering at Waterloo

Increase the confirmation rates of offers made to female undergraduate engineering applicants

- As shown in Figure 10, female confirmation rates did not meet our established target in 2012. Interestingly, the male confirmation rate this year was also lower than normal. Despite being below target, we continue to see a slight increase in the percentage of women entering first year, as shown in Figure 109.
- In 2013/14, all female applicants who received offers in departments with a relatively lower proportion of female students received a handwritten letter from a faculty member in the department.
- In 2012/13, we supported one Women in Engineering applicant event for female prospective students who had received an offer of admission; in 2013/14 this was expanded to two events.

Figure 10: Female Undergraduate Confirmation Rate Performance to Target



Establish best practices related to the recruitment of women faculty

- Figure 1 shows our proportion of women faculty has slipped slightly below target. This is due in part to the reduction in hiring opportunities resulting from the closure of the UAE campus.
- A protocol is yet to be developed to ensure that any time a new faculty search committee is established, the Associate Dean, Outreach can meet with the committee in the early stages to discuss and identify ways to ensure the applicant pool for the position reflects the typical gender composition of the field's PhD pool.
- We may in future consider hosting an event for a select group of postdoctoral fellows and senior PhD candidates to provide information on academic careers while highlighting Waterloo Engineering.

Develop a better understanding of the experience of women in engineering at Waterloo

- Select responses from the undergraduate engagement survey conducted in winter 2012 have been analyzed by gender. Overall there was not a statistical difference based on gender on most questions. However, some interesting trends emerged that suggested the level of dissatisfaction of women in programs with lower proportions of women students (<15%) was slightly higher than that of programs where the representation of women was higher. This bears further study in future iterations of this survey.
- Three female faculty social events held in 2012/13 were used as a platform to understand the resources women faculty need from the WiE committee.

Goal F4: Build an Inclusive Atmosphere within Waterloo Engineering

Establish a framework to report and respond to issues of diversity and inclusivity

- A website has been developed with resources, information and links to relevant on-campus offices.
- A clear path has been provided, and posted to the website, for reporting issues of diversity and inclusivity.
- Information sessions and panels on related topics have been held each semester (topics have included parental leave; harassment in the workplace; and pursuing an academic career).
- A mentorship program has been established, with mentor training provided, between junior and senior undergraduates and graduate students in the same department where concerns and advice can be shared.

Support individuals and groups that may identify with under-represented elements of diversity

- Individuals are supported through WiE committee events and initiatives, including workshops, mentorship, professional development opportunities and social events.

- Connections have started to form with groups across campus that support under-represented elements of diversity such as Women in Math, Women in Science, Technology, Engineering and Math (WiSTEM) and the Status of Women and Equity Committee (SWEC).
- To recognize its work in this important area, the WiE Committee was awarded the University of Waterloo SWEC Equity Award in June 2013.

G. Internationalization

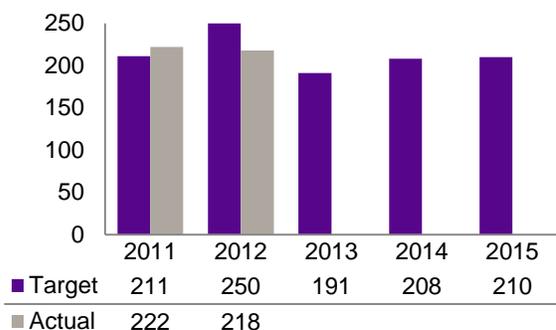
In October 2012, the University of Waterloo’s Board of Governors voted to support a recommendation to consolidate programs offered at the University’s campus in Dubai, UAE on the main Waterloo campus, starting in September 2013. This decision brought to an end our plans related to the two programs the Faculty of Engineering had been offering at the Dubai campus. The original Vision 2015 goal (G5) to support the ongoing development of the UAE campus programs has therefore been removed in this update, and various targets and strategies throughout have been edited to reflect the resulting changes. Going forward, we will continue to support the globalization of our undergraduate experience and will focus on strategic internationalization through the development of partnerships with a targeted set of leading global universities.

Goal G1: Increase International Undergraduate Enrolment

The original Vision 2015 undergraduate student intake plan has been edited in this update to reflect changes resulting from the closure of the UAE campus and the proposed undergraduate expansion (see Section B).

- Because the majority of the UAE campus registrants were international students, this change results in a significant reduction in our projected international student intake starting in 2013 (see Figure 11).

Figure 11: International Undergraduate Student Intake Plan Performance to Target



Enhance international recruitment efforts

- Original strategies to leverage the efforts of staff in the UAE to promote international recruitment to Waterloo’s main campus will no longer be possible.
- We continue to partner with the Faculty of Mathematics and colleagues across campus to maximize international recruitment opportunities, building on established connections while also exploring new, emerging markets. Recruitment efforts have been largely focused in India and the Middle East region, but are also expanding to include parts of South East Asia.
- Faculty participation in outreach activities has amplified recruitment messages and helped to further highlight and differentiate Waterloo Engineering abroad.

Goal G2: Increase International Experience Opportunities for Undergraduates

Increase participation in international exchange

- Our undergraduate student participation in exchange remained stable in 2012 (see Figure 12).

Develop additional international co-op work term opportunities

- 2012 was a very successful year, exceeding target (see Figure 13) by over 200 work terms.

- Since strategies for further international work term development relied on the UAE campus location and staff, it is yet to be seen if the closure of the UAE campus will have a detrimental impact in the coming years. Co-operative Education and Career Action will work to maintain employer relationships that have been established; however, they do not plan additional international job development efforts at this time.

Figure 12: Waterloo Engineering Student Participation in International Exchange, 2005-2012

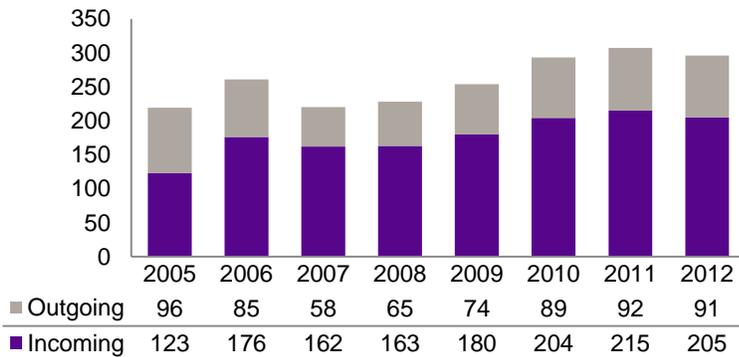
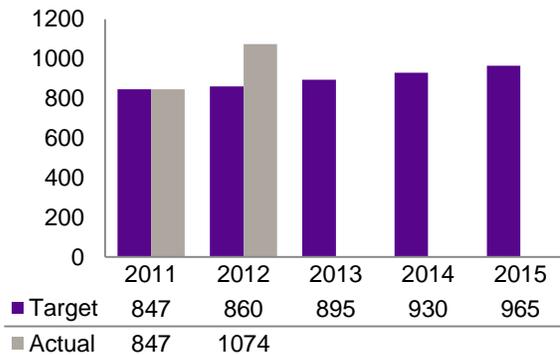


Figure 13: International Co-op Work Terms Performance to Target



Goal G3: Increase International Graduate Studies and Research Collaborations

Develop an international research strategy and pursue strategic internationalization in graduate studies

- We are re-focusing internationalization efforts on the development of strategic research relationships, aligned with our areas of strength, with a targeted set of top-ranked global institutions.
- In 2012, an MOU was established with Karlsruhe Institute of Technology in Germany, and in 2013 a delegation visited Nanyang Technological University in Singapore to explore research collaborations in the area of water treatment/management.
- Since 2011, engineering faculty and research institute executives have received 14 International Research Partnerships grants from Waterloo International, to explore collaborations with institutions in nine different countries.
- As discussed in the Graduate Studies section of this report, a relatively high proportion of our graduate students are international. Goal C3 suggests a new mechanism to help assess international applicant quality.

Establish an international office in the Faculty of Engineering

- Resource constraints have prevented progress on this strategy; we are currently investigating the potential for partnership with Waterloo International to move this strategy forward.

Goal G4: Pursue Targeted Collaboration Initiatives in India

- We are currently working with the university to explore the potential for a strategic academic relationship with a partner in India.

H. Entrepreneurship

Excellent progress has been made on our Vision 2015 goal to enhance support for entrepreneurship and innovation. To reflect the Faculty's increasing commitment to entrepreneurship at all levels, additional related goals and strategies have been added in this progress update.

Goal H1: Enhance Existing Supports for Entrepreneurship and Innovation

Transition the Conrad Business, Entrepreneurship and Technology Centre to a school in the Faculty

- Foundational work is in place toward making this transition once Conrad reaches sufficient size and research intensity.

Expand and enhance the Enterprise Co-op program

- The E Co-op program, which Conrad has a mandate to run for the institution, will be reviewed next year.
- In addition to continuing to grow and develop the E Co-op program, Conrad has also included this program as a key component of the proposed new undergraduate option in entrepreneurship.

Ensure all engineering programs include a capstone design project

- All engineering programs now include a capstone design project. Support for capstone projects has been enhanced through the introduction of various awards, described under Goal H2.

Goal H2: Introduce New Initiatives to Foster Entrepreneurial Activity and Innovation

Develop a formal opportunity to expose select engineering students to entrepreneurship during their first work term

- The BETS (Bridging Entrepreneurs to Students) program was first piloted in spring 2012, with very positive results. This program provides first-year engineering students who do not secure a co-op job in their first work term with an opportunity to work with local start-up ventures through a series of four-week placements.
- The BETS program was delivered to 20 students in its second offering in spring 2013 and a plan is in place to deliver it in the spring and winter terms for at least the next two years.

Seek formal collaboration initiatives to connect Conrad students with other engineering students and faculty

- In fall 2013 Conrad hosted its first "Meetup to Startup" events, during which fourth-year students from engineering programs presented their capstone design projects to students in the MBET program, benefitting from MBET students' advice and expertise.
- MBET students are now investing their talents in select engineering student projects, developing technology deployment business models in partial fulfillment of one of their course requirements.

Pilot competitive business plan awards for capstone projects

- Entrepreneurship awards for engineering capstone projects have been introduced, beginning with awards provided by the Norman Esch Foundation in spring 2013. Conrad is providing administrative support to these awards and their related competitions.

Introduce a Graduate Diploma in Advanced Management

- Conrad has launched the Graduate Diploma in Advanced Management, originally only to students currently in professional master programs. Following government approval in fall 2013, we will admit students who have completed their professional master's degree and want to continue on with the diploma beginning in 2014.

Launch an undergraduate option in Engineering

- An undergraduate option in entrepreneurship has been developed and is currently moving through the various formal approval stages.
- Conrad will extend this option to other faculties should there be interest.

Goal H3: Develop New Spaces and Infrastructure to Support Entrepreneurship and Innovation

Embed the facilitation of entrepreneurship in the design of E7

- The current plans for Engineering 7 include a number of features and resources designed specifically to be supportive of entrepreneurship and innovation:

- Space for the Engineering Ideas Clinic, which will promote hands-on collaborative learning experiences that expose students to engineering challenges and help integrate learning across courses and years of study. A major thrust of this initiative is also to enhance all undergraduate programs with learning opportunities to integrate the digital world with the physical environment.
- Accommodation for the Conrad Centre within Faculty of Engineering space, promoting closer collaboration among faculty and students in Conrad and the other engineering departments.
- A pitch area within the atrium between E5 with E7, to promote interactive and collaborative forums.
- An expanded student machine shop, to provide students with resources needed to help move their innovative ideas to reality.
- A supply store to provide components to support student projects.

Strengthen campus opportunities to build-test hardware devices and prototypes

- Space has been allocated (in East Campus Hall, providing close access to student design facilities in E5) to house “The Bridge,” an Engineering-led facility that will provide space to help entrepreneurial students move their hardware innovations from idea to reality.
- Planning is underway to renovate the space as needed.

I.Space

As shown in Figure 119, Waterloo Engineering space holdings have increased by 22,528 nasm (just over 58%) over the past seven years, to reach 61,211 nasm. While this is a significant achievement, space limitations remain a significant constraint on the attainment of many of our plan goals. Space and facilities are also essential supporting elements to our strategic goals for entrepreneurship (see above) and our new priority, outlined in goal I3, to enhance our safety practices.

Goal I1: Complete a Comprehensive Update to the Existing Space Plan

- The Vision 2010 space plan set a target of 60,000 nasm excluding the Quantum Nano Centre (QNC). From 2007-2013, Engineering increased its actual space inventory to 55,746 nasm excluding QNC (61,211 nasm including QNC), through various renovation/expansion projects and the construction of ERC, E5 and E6.
- In addition to the current shortfall to meet our original Vision 2010 requirements (over 4,000 nasm), our Vision 2015 plan calls for enrolment and complement growth as well as the relocation of one of our units from the north campus to a home within the Faculty of Engineering space on the main campus.
- Currently, the Vision 2015 space plan requirements are estimated in the 70,000-75,000 nasm range.

Goal I2: Create the Space Required to Meet Operational and Strategic Needs

- Renovation of the DWE C-Wing was completed in April 2013, providing space for CEE undergraduate and research activities as well as temporary office space for the Engineering Advancement team (until E7 is built).
- The construction of E7 remains the top space priority for the Faculty. This building is required to accommodate the growth (over 825 undergraduate and 190 graduate students at steady state) related to our planned undergraduate expansion in biomedical and mechatronics engineering. Our immediate focus is on the space plan and fundraising required to initiate its approval and construction. E7 will be a seven-storey building located adjacent to E5 and connected to E5 and E6. It will provide additional space for the departments already located in E5 (MME, ECE and SDE), a new home for the Conrad Centre, and consolidated office space for Faculty administration. The flagship Engineering Ideas Clinic will be located on the ground and second floor. The ground floor will also house an expanded undergraduate machine shop, student commons for study space and the outreach program.
- E8, planning for which is on hold until E7 is approved, will consolidate Chemical Engineering activities adjacent to E6 and allow that department’s existing space in DWE to be reallocated within the Faculty.
- Efforts are underway to identify a short-term storage solution while planning a long-term multi-purpose facility for the storage of large experimental research specimens, field vehicles and heavy service equipment.
- As entrepreneurship is of strategic importance to our future, our space implementation plans will support efforts to nurture entrepreneurship and innovation on campus: Goal H3, above, provides detail on these efforts, including embedding the facilitation of entrepreneurship in the design of E7 and developing a facility to strengthen campus opportunities for students to build-test hardware devices and prototypes.

Goal I3: Harmonize all Aspects of Safety within the Faculty of Engineering

- An Engineering Safety Planning Committee was struck in August 2012 to identify the three highest priority projects that would improve safety and risk management in the Faculty:
- Building and Lab Security Update: The committee is examining options to increase engineering security and occupant safety through enhanced security for interior and exterior doors (e.g. combo locks, proximity readers/FOBs).
- Safety Training Status Interface: The committee identified a need for a simple, easy-to-use computer interface to determine the status of employee and student training. This has become a university initiative under IST.
- Hazard Analysis and SOPs (Standard Operating Procedures) for Engineering Equipment: This plan is in progress across departments; some have completed a hazard analysis and written required SOPs while the hazard analysis is ongoing in other departments. Where possible, existing SOPs for similar equipment will be used across departments.

J. Information Technology

Information technology is a key resource to support our strategic plan. To date, Engineering Computing has met all its goals set out in support of the Vision 2015 plan and developed some new initiatives consistent with our strategic direction.

Goal J1: Ensure a Quality Computing Environment

- The WEEF lab was substantially renovated and upgraded to provide an excellent learning and modern computing environment for our first-year students.
- Undergraduate computer labs and terminal servers are upgraded and/or renovated on a rotating basis, following a regular schedule to ensure quality computing environment for all students. In addition to improving computer speed and monitor size, the undergraduate lab upgrades completed to date have also included the installation of some laptop stations and improvements to the use of space for studying and collaboration.
- A computer lab for professional master's students (who previously did not have access to dedicated computing resources on campus) was opened in fall 2013. The lab includes 25 desktop and nine laptop computing stations as well as collaborative work space.

Goal J2: Enhance Support to Computing Clients

- Two part-time Helpdesk positions have been added to increase operating hours.
- Staff access to computing support has been simplified through a single point of contact, through which requests are routed to the most efficient and appropriate individual(s) for response.

Goal J3: Support Improvements to Operational Efficiency and Innovation in Service Delivery

- The Associate Dean, Computing has established a process by which inefficient or ineffective operations and/or duplication of work are identified by Engineering Computing staff and solutions are developed, either by adapting and sharing existing systems or by implementing new systems. Among such innovations:
 - Engineering Computing is purchasing a fileserver to provide a secure, cost-effective and salable disk space for Engineering researchers to back up their research data.
 - Engineering Computing, with the assistance of departmental computing staff, have created a mobile portal of apps suitable for student laptop, tablet and phone use.
 - Engineering Computing has developed a new functionality in its Online Faculty Information System to assist faculty with the completion of the Common CV.

K. Advancement

Goal K1: Secure the Philanthropic Support Required for our Priority Initiatives

Close the gap in the Vision 2010 Campaign, with a focus on infrastructure funding

- The Vision 2010 campaign has currently achieved 80.8% of its \$120 million fundraising goal.

Develop and execute a fundraising strategy for Vision 2015 priorities, in particular as they relate to capital needs and graduate fellowships

- In an effort to move forward from the Vision 2010 brand for the Faculty of Engineering fundraising campaign as well as incorporate the Vision 2015 fundraising priorities, it was determined that we will extend the campaign and re-brand, focusing on major and principal gifts to close the Vision 2010 infrastructure funding gap and focus on Vision 2015 priorities, including :The Engineering Entrepreneurship Building (E7) – Home to the Ideas Clinic; graduate scholarships; and student experience initiatives.

Maintain Faculty-level fundraising while supporting department priorities through enhanced annual fund initiatives and goals

- Waterloo Engineering is donor-centric in its fundraising approach, working with our donors to match their philanthropic interests with our broad range of programs, student needs and projects. During the past year, financial and in-kind support was raised to support departmental needs through undesignated donations to program support and equipment as well as targeted donor gifts to, for example: equipment support for the OLED lab, the welding engineering program, and capstone design prizes.

Engage our alumni at a higher level by offering strategic engagement opportunities based on their interests and capacity

- The restructuring of the alumni affairs program progressed as we continued to shift from a broad-based event model to a plan that includes more strategic events that are focused on our key geographic areas (Waterloo, GTA, Ottawa, Calgary and San Francisco/Bay area). A permanent events manager was hired to support this transition.

Goal K2: Enhance the Faculty's Reputation as a World-class Leader in Engineering Research and Education

Strengthen the faculty brand through consistent messaging and visual identity

- The foundation for success in external communications is the brand: a shared understanding of who we are and how we tell our story, supported by a positioning statement, key messages, a clear visual ID, strategic marketing and strong stakeholder engagement. During the past year, a significant initiative was undertaken to define and develop key messaging for Waterloo Engineering. This forms the basis for messaging during the Vision 2015 plan period.

Improve all web sites and introduce new electronic and social media strategies

- During the past year, the top priority has been to manage the migration of our very complex and large web site to the new Drupal platform that has been adopted by the University. We successfully migrated all Tier 1 department websites and priority sub-sites to the university's web content management system. In addition, training was given to departmental content providers on writing for the web and accessibility guidelines.

Develop and implement a strategic graduate student recruitment program

- Significant progress was made in this area during the past year. A Graduate Recruitment Co-ordinator was hired and an engineering graduate studies marketing and recruitment plan was developed and executed. The plan preparation included a competitive and market analysis.

Support efforts to create an engaging and inclusive environment for current students

- Highlights for the year included the creation and successful roll out of the Engineering Ambassador Team. This past year was also one of the highest quality years yet for admissions, exceeding targets.

Expand Waterloo Engineering's profile as a world-class school of engineering

- Strategic efforts to raise Waterloo Engineering's profile in a meaningful way were delayed during the past year due to the delay in hiring the Associate Director, Marketing and Communications and as a result of prioritizing the need to define the Waterloo Engineering brand and key messages. With this now in place, tactics to raise our profile can start.

Lead efforts to keep faculty and staff informed of key initiatives and achievements.

- This was delayed while we worked to fill the Associate Director, Marketing and Communications position.

Support Vision 2015 development and alumni objectives with best-in-class marketing communications

- This new strategy is a priority for the coming year, as high-quality marketing communications materials will be required to support the Faculty's extended and rebranded campaign, described above.

L. Academic Unit Plans

This section presents a summary of the annual Vision 2015 progress report prepared by each of our academic units. These reflect progress on the goals and targets outlined in their implementation plans, which were included as an appendix to the original Vision 2015 plan.

School of Architecture

Rick Haldenby, Director

A. FACULTY AND STAFF PLAN

Figure 14: ARCH Faculty Complement Plan Performance to Target

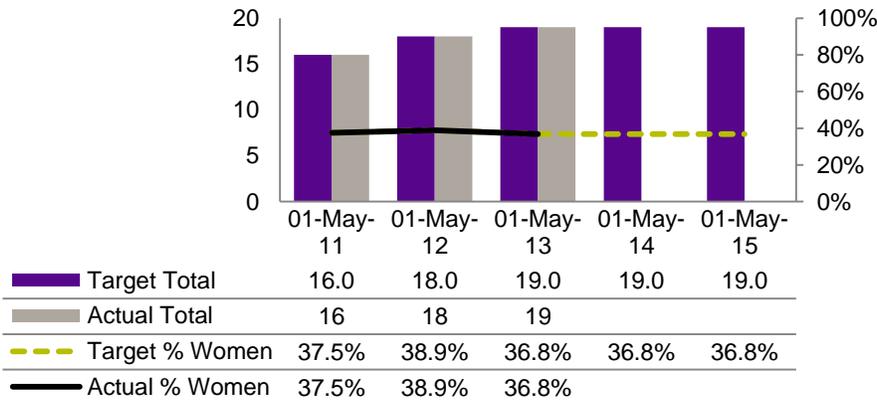
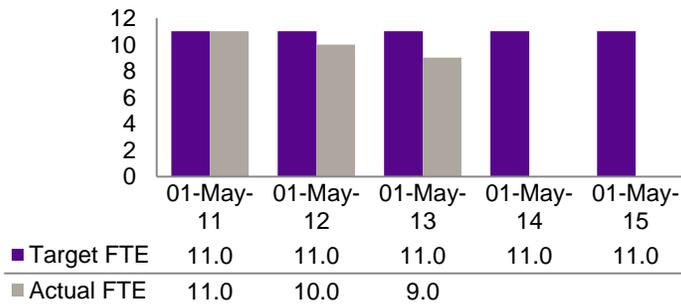
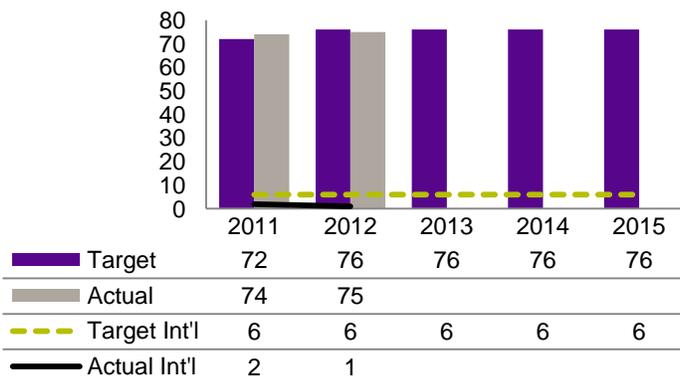


Figure 15: ARCH Staff Complement Plan Performance to Target



B. UNDERGRADUATE STUDIES PLAN

Figure 16: ARCH Undergraduate Intake Plan Performance to Target



C. GRADUATE STUDIES PLAN

Figure 17: ARCH Graduate Intake Plan Performance to Target by Visa Status

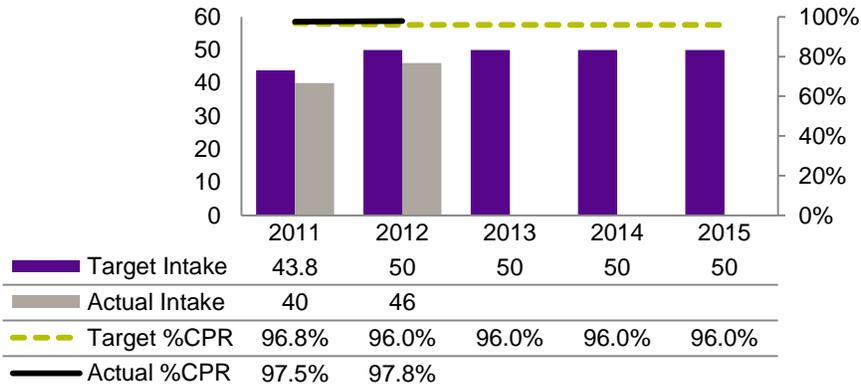
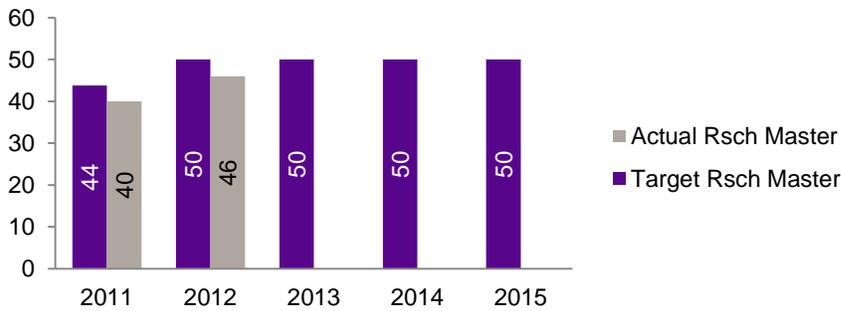
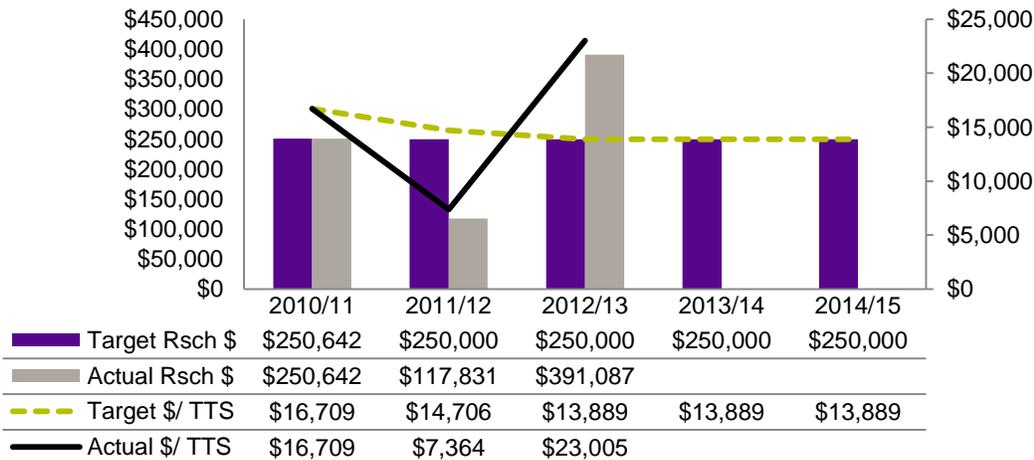


Figure 18: ARCH Graduate Intake Plan Performance to Target by Program Type



D. RESEARCH PLAN

Figure 19: ARCH Research Plan Performance to Target



Conrad Business, Entrepreneurship & Technology Centre

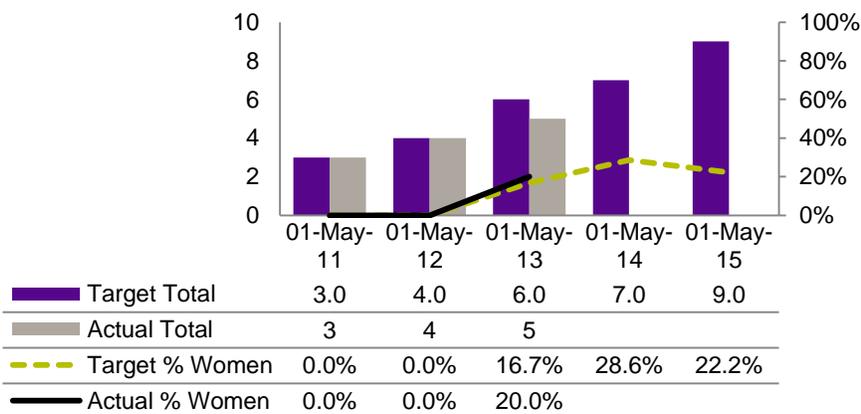
Doug Sparkes, Interim Director

The Conrad Business, Entrepreneurship & Technology Centre (Conrad) has made solid progress toward many of its Vision 2015 goals while also playing a key role in the implementation of the Faculty of Engineering's Vision 2015 plan related to entrepreneurship (see Section H, above). This includes progress on existing goals related to graduate studies and the centre's administrative structure as well as new undergraduate strategies such as the development of an option in entrepreneurship and support for capstone project awards.

A. FACULTY AND STAFF PLAN

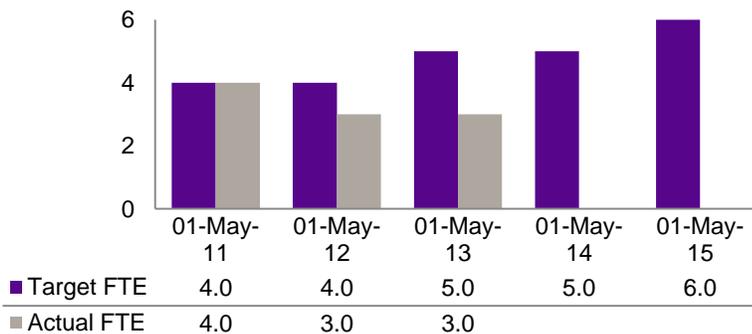
- We have added three new faculty members, consistent with our faculty complement plan. One position has become open following a resignation.
- The addition of the undergraduate option in entrepreneurship, not included in the Vision 2015 plan, will necessitate additional faculty resources.

Figure 20: Conrad Faculty Complement Plan Performance to Target



- One administrative staff position remains open currently and the planned IT support staff position has been on hold while plans for new master's programs are reviewed.
- It is anticipated that our current contract staff person supporting the BETS initiatives will become a regular ongoing position if the program moves beyond pilot.

Figure 21: Conrad Staff Complement Plan Performance to Target



B. UNDERGRADUATE STUDIES PLAN

- We have developed an undergraduate option in entrepreneurship, which is currently moving through the various formal approval stages.
- Following the successful pilot of the Bridging Entrepreneurs to Students (BETS) program, described under Goal H2 of the Entrepreneurship section of this report, we are working with CECA and Engineering's Associate Dean for co-operative education on its implementation.

- Awards for engineering capstone projects that have potential to be commercialized have recently been introduced. We are providing administrative support to these awards and their related competitions.
- A review of the Enterprise Co-op program is expected in the coming year.

C. GRADUATE STUDIES PLAN

- While we are still working to stabilize our MBET enrollment to at least 50 students, we have augmented the program so that it now includes a certificate in Sales Management and satisfies the education requirements for CMC (Certified Management Consultant) designation.
- We have undertaken several initiatives in our print and web advertising, while working more closely with the Faculty of Engineering to attract more Waterloo graduates.
- The Graduate Diploma in Advanced Management had its first classes in spring 2013. Fee approval was received from the provincial government in October 2013, opening the program to students who have finished their professional master's degree and want to continue with the diploma.
- No progress has yet been made toward developing the planned new master's programs in intrapreneurship and innovation or in product management. The graduate targets shown in Figure 22 and Figure 23 are adjusted accordingly.

Figure 22: Conrad Graduate Intake Plan Performance to Target by Visa Status

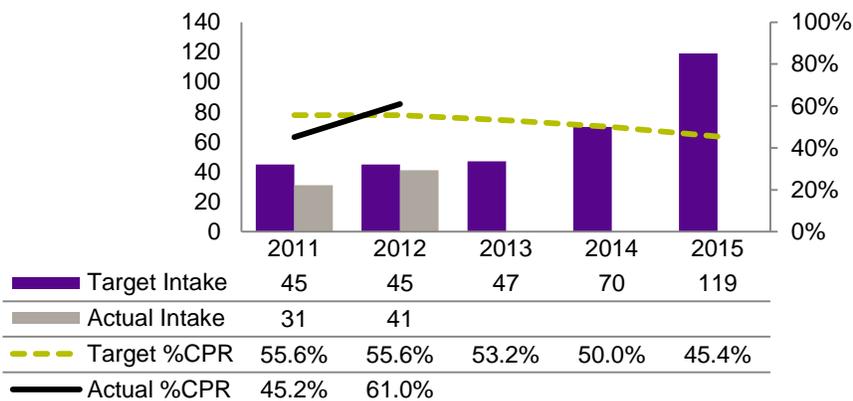
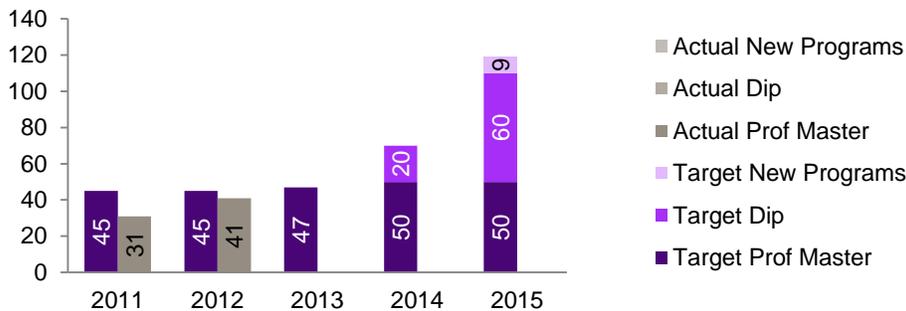


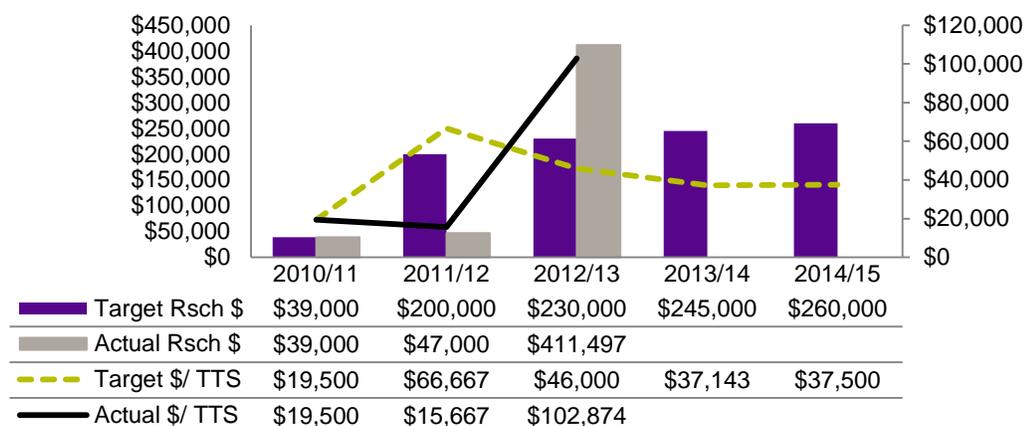
Figure 23: Conrad Graduate Intake Plan Performance to Target by Program Type



D. RESEARCH PLAN

- Recent faculty hires have been research-oriented; they continue to establish their research programs.
- We have received a large research grant from GMAC, focused on developing methods and infrastructure to support entrepreneurship. Several international partners have expressed interest in this initiative.

Figure 24: Conrad Research Plan Performance to Target



E. DEVELOPMENT PLAN

- A development committee has been established as a sub-committee of the Conrad Advisory Council.
- Significant changes have been made toward creating a sustainable alumni organization, including a new governance structure.
- Our development activities will be shifted to focus more on operational initiatives while working closely with the Faculty and University on development efforts to support entrepreneurship.

F. GOVERNANCE, ADMINISTRATION & LEADERSHIP PLAN

- We continue to implement processes and procedures related to finance and HR that will bring us in line with other departments in Engineering. These efforts will increase efficiency and scalability and will assist in the transition from a research centre to a school. The development of a related case has begun.
- The former Administrative Manager position was redefined and an Administrative Officer has been appointed to manage all aspects of the Centre’s finances and HR activities.
- Launch of the “Conrad” brand has begun and is an ongoing activity. At this time all advertising and correspondence uses the Conrad branding. This branding aims to move away from the former CBET image and to acknowledge that Conrad has become more than just the MBET program.
- Initial terms of reference have been developed for the Conrad Advisory Council; several issues remain to be addressed, some of which may lead to a restructuring of the council.
- The need for succession plans at the Director and Associate Director levels is a top priority.

Chemical Engineering

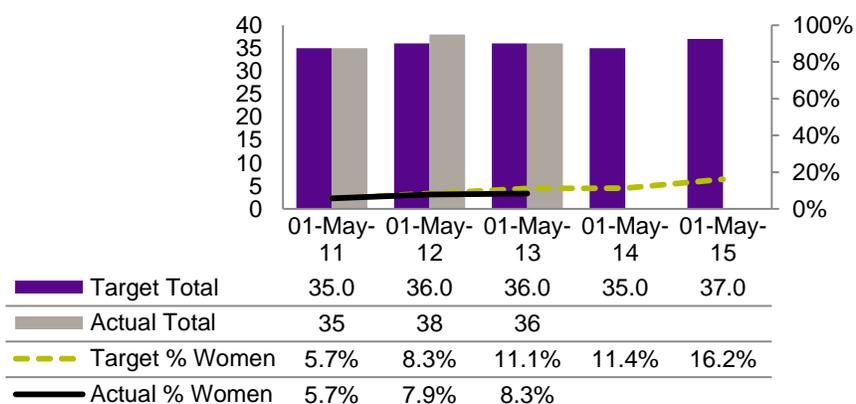
Eric Croiset, Chair

For Chemical Engineering, the major change from our original Vision 2015 plan is the closure of the UAE campus, which has impacted significantly the planned faculty and staff growth. All figures included in this progress report have been updated to eliminate growth related to the UAE initiative.

A. FACULTY AND STAFF PLAN

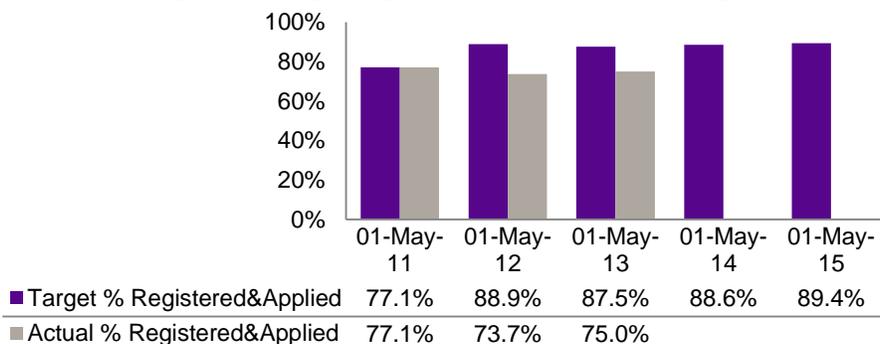
- As shown in Figure 25, new faculty hiring is progressing according to projections (minus UAE growth).
- Our move to E6 and QNC greatly enhances research facilities to show to candidates, and laboratories and offices are now available for our next hires.
- Due in part to the decrease in hiring opportunities resulting from the closure of the UAE campus, our proportion of faculty who are women has fallen below our original targets. We are targeting 50% of the next six faculty we hire (two new positions and four replacements) to be women.
- Events aimed at improving collegiality through increased inter-departmental interactions among students, faculty and staff have typically been well attended. E6 is particularly well suited to this type of activity.

Figure 25: CHE Regular Faculty Complement Plan Performance to Target



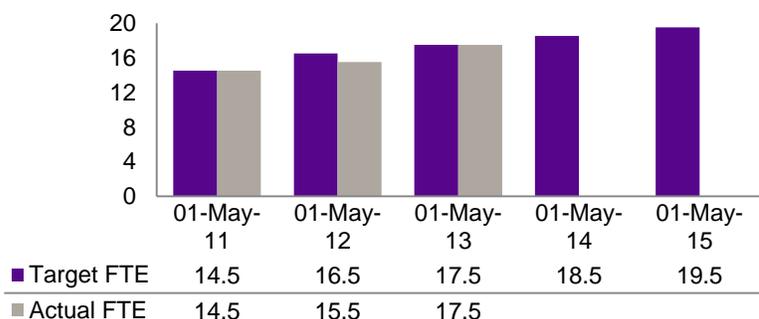
- As shown in Figure 26, although the number of faculty members registered for PEng has increased, the proportion of faculty members applied and registered for PEng is below target. We should pass the 80% mark for May 2014.

Figure 26: CHE Regular Faculty PEng Status Performance to Target



- As shown in Figure 27, staff hiring is progressing according to schedule. It is important to note that one administrative staff member included here is dedicated solely to the nanotechnology undergraduate program.
- Several staff members have participated in on-campus professional development programs (e.g. leadership training, web training, and supervisory training) and one staff member pursued a specialised off-campus workshop. Our professional development focus for the coming year is to develop cross-training for administrative staff to ensure each position can be “backed up” when required.

Figure 27: CHE Staff Complement Plan Performance to Target



B. UNDERGRADUATE STUDIES PLAN

- The undergraduate student laboratory experience has been significantly improved through the purchase of several state-of-the-art laboratory apparatus, funded by the Vision 2015 Undergraduate Laboratory Enhancement Initiative. Although all students are benefitting from these major upgrades, the focus in the past year has been toward senior students’ laboratories.
- Case studies have been introduced in some courses, such as CHE 360 (Bioprocess Engineering).

- A department teaching champion has been created.
- Extensive departmental consultation has resulted in a comprehensive document of course mapping and outcome measurement.
- As described in Goal B5 of the Undergraduate Studies section, a CECA/Chemical Engineering pilot job development program has been completed. Recommendations were made, but a number of first-year students continue to experience difficulties in securing a position outside of the University.

Figure 28: CHE UG Intake Plan Performance to Target

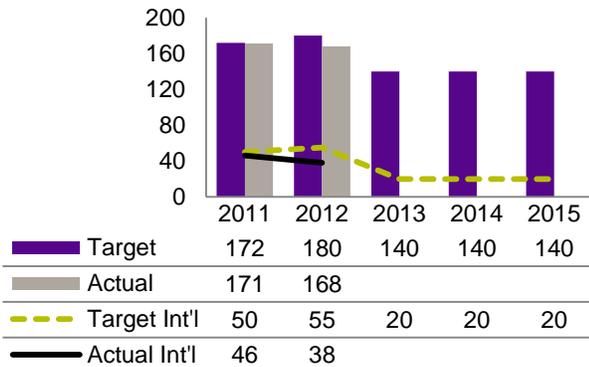
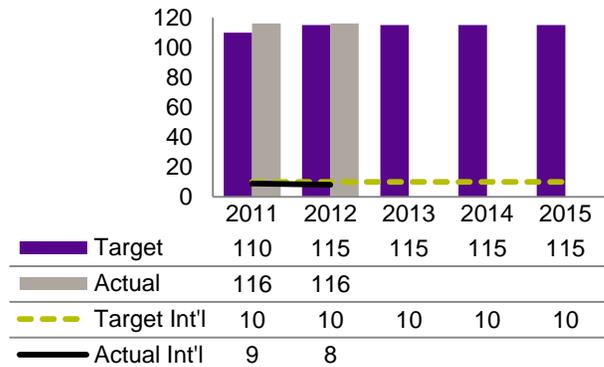


Figure 29: NANO UG Intake Plan Performance to Target



C. GRADUATE STUDIES PLAN

- In 2012 our intake of Canadian and permanent resident students, especially in the PhD program, was well below target. This was somewhat compensated by an increase in international student intake, especially in the professional master program.
- We hold annual recruitment events for senior Waterloo students and continue to work closely with Faculty offices to improve our advertising efforts, including our website. Budgetary constraints have prevented us from pursuing an on-campus recruitment event for prospective students from other Canadian institutions.
- We continue to work to improve our graduate course offerings. The offering of 600-level core courses is now posted at least eight months in advance. Due to the decrease in faculty complement growth, the annual number of graduate courses will increase to 12 as opposed to the original goal of 20.
- Despite significant department interest in an online MEng program, little progress has been made yet.
- Increased international interest in our MEng has warranted an increase to our international MEng targets.

Figure 30: CHE Graduate Intake Plan Performance to Target by Visa Status

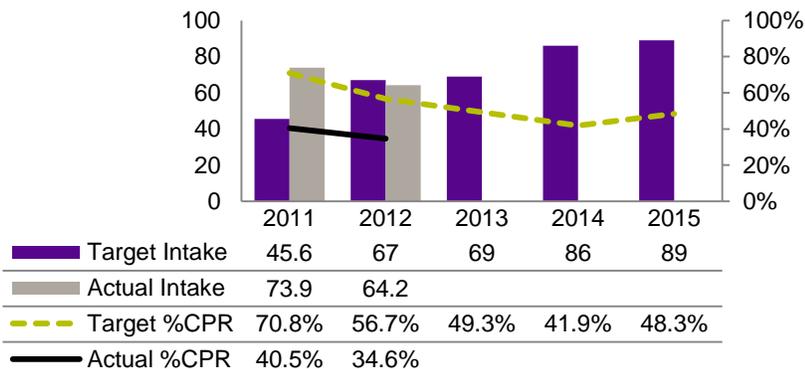
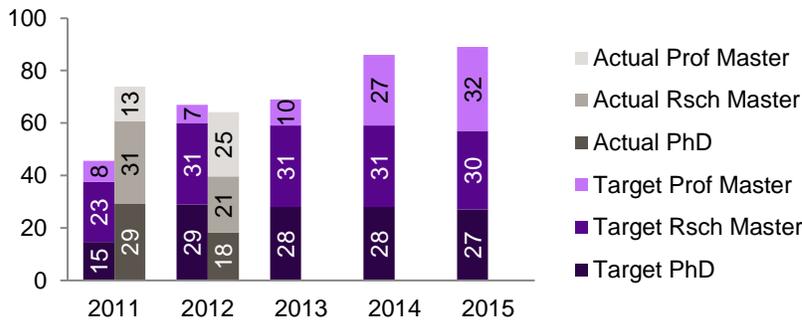


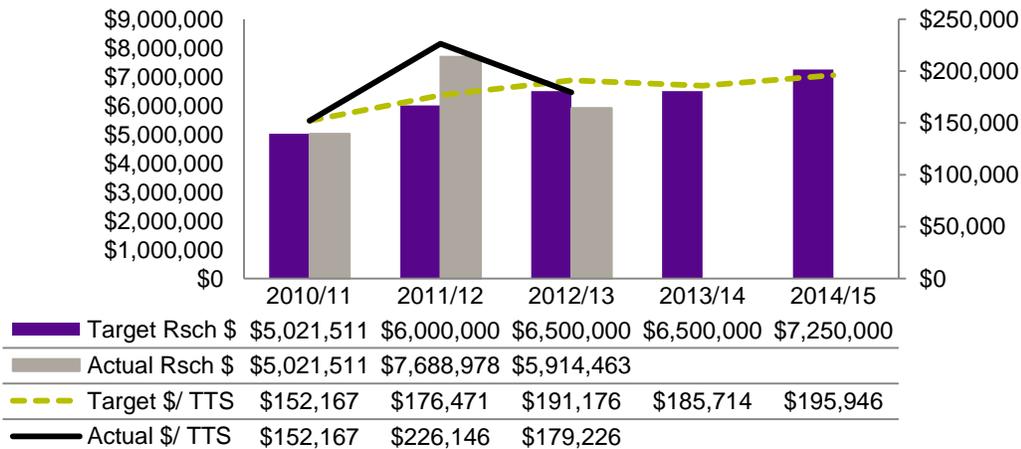
Figure 31: CHE Graduate Intake Plan Performance to Target by Program Type



D. RESEARCH PLAN

- Department consultations have resulted in a revision to our original seven theme areas into four research themes that represent the existing and aspirational department strengths. Research theme planning documents have yet to be developed.
- A committee has been formed to refine the duties and expectations of a planned Associate Chair, Research.
- A new role of Financial Assistant, which will manage faculty members’ research accounts, should be filled by the end of 2013.
- Two planned staff positions supportive of research growth (an Industry Relations Officer and a Technician to support our central analytical services) have not been created due to reductions in staff growth that have resulted from the closure of the UAE campus.

Figure 32: CHE Research Plan Performance to Target



E. SPACE PLAN

- With the closure of the UAE campus, work toward E8 design has been put on hold.
- An immediate objective is to consolidate our current space where faculty members are now located in three buildings (E6, DWE, and QNC).

F. TECHNICAL SERVICES PLAN

- A Technical Operations Director has been established and significant changes in technical services operations are being made, including a new organization structure and electronic work requests.

Civil & Environmental Engineering

Neil Thomson, Chair

The cornerstone element in the Civil & Environmental Engineering Vision 2015 plan was the UAE initiative, which was ended with the closure of the UAE campus described in the International section above. This initiative was associated with a target intake of 60 students into the CIVE program at the UAE campus by 2015, and the hiring of 11 new faculty and five new staff in CEE. Our targets described in this update have been altered accordingly.

A. FACULTY AND STAFF PLAN

- We have met our faculty hiring targets and have also added an unplanned exceptional joint hire (0.51FTE).

Figure 33: CEE Faculty Complement Plan Performance to Target

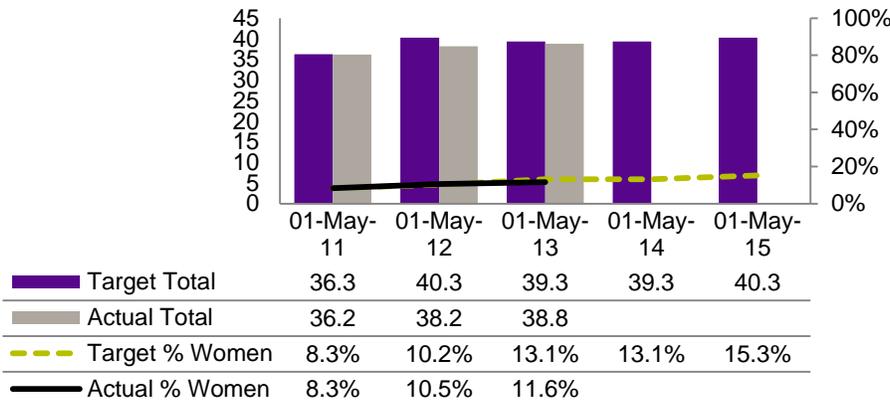
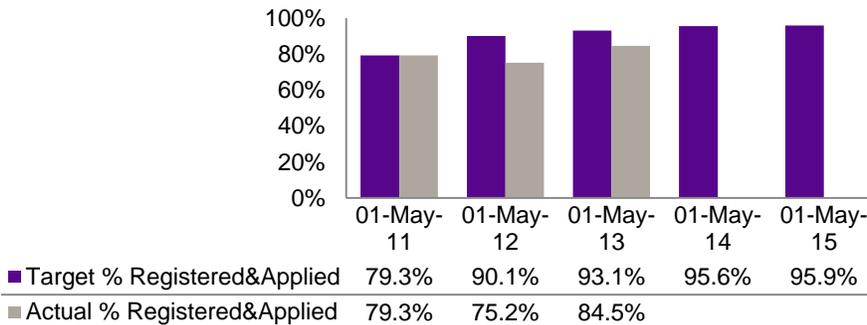
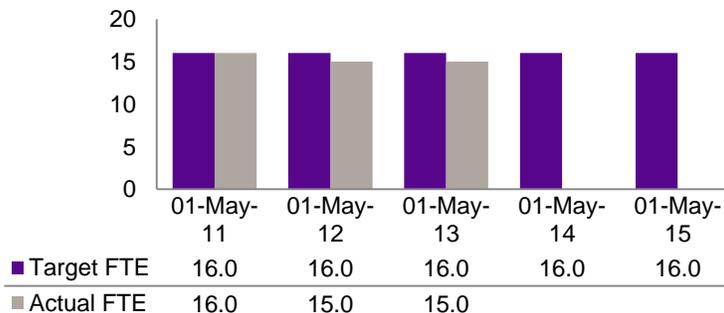


Figure 34: CEE Regular Faculty PEng Status Performance to Target



- We have met our staff hiring targets, including the establishment of an Administrative Officer for CEE.
- As a result of the staff growth reductions following the closure of the UAE campus, other staff roles projected in Vision 2015 will not be created. We continue to examine the areas these roles were originally planned for, and are attempting to address these needs through position review and the interim use of contract staff.

Figure 35: CEE Staff Complement Plan Performance to Target



B. UNDERGRADUATE STUDIES PLAN

Figure 36: CIV UG Intake Plan Performance to Target

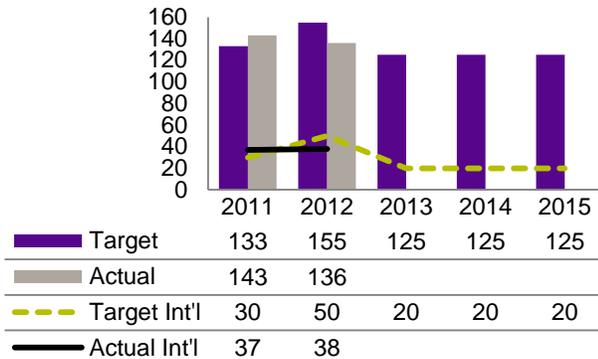
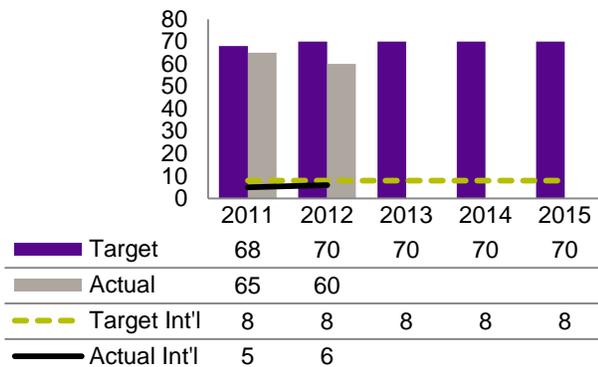
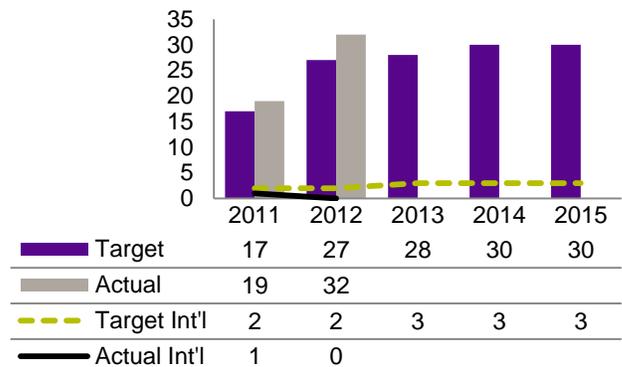


Figure 37: ENV UG Intake Plan Performance to Target



In 2012, intake into the Civil Engineering program (CIV, Figure 36) was lower than target due to low intake at the UAE campus. Environmental Engineering (ENV, Figure 37) program intake remains strong but slightly under target. Geological Engineering (GEO, Figure 38) program intake was above target in 2012.

Figure 38: GEO UG Intake Plan Performance to Target



- The Curriculum Review Committee continues to pursue a comprehensive curriculum and course content review. This multi-year initiative has been slow due, in part, to the need to gather necessary momentum for change. The 1A term has been revised with input from the Engineering Undergraduate Office and the committee is moving toward seeking departmental support for a revised curriculum before the end of 2013.
- Upgrading and expanding teaching laboratory equipment is ongoing, with a commitment to use the funds available to enrich the hands-on experience of undergraduates. Progress has been slow here since laboratory equipment upgrades must be tied to the curriculum review described above.
- In spring 2013, we revised the process for marking co-op work-term reports and revised the writing workshops and tutorials offered to students.
- To improve the undergraduate student experience, two class professors have been assigned to a cohort rather than a class; the number of sessional instructors per cohort is being monitored; a formal TA evaluation process has been implemented; and faculty attendance at convocation and other events has increased.
- To increase undergraduate student engagement, project teams have been encouraged to compete in national and international competitions; the CSCE student chapter is active and student chapters for other societies are under consideration; and CEE is actively supporting the growing concrete toboggan team.
- In keeping with the findings of a pilot conducted by the Faculty of Engineering and Co-operative Education and Career Action, we have decided to remove the objective to pursue an eight-month co-op work term.
- A new undergraduate goal, not included in the original Vision 2015 plan, involves the development of a new undergraduate program: CEE and the School of Architecture are currently developing a proposal for a new undergraduate program in Architectural Engineering. The program will produce a new type of engineer who works at the intersection of civil engineering and architecture to meet the large current and future demand for engineers who are technically skilled in the whole scope of building design, construction, assessment, repair, and refurbishment.

C. GRADUATE STUDIES PLAN

Overall graduate growth has been hampered by the UAE program reconsolidation and reduced interest in the MEng program. The FTE research graduate student/faculty ratio has increased significantly from 4.5 to 5.3 (FOE average is 4.7). Increasing graduate student quality remains an issue.

Figure 39: CEE Graduate Intake Plan Performance to Target by Visa Status

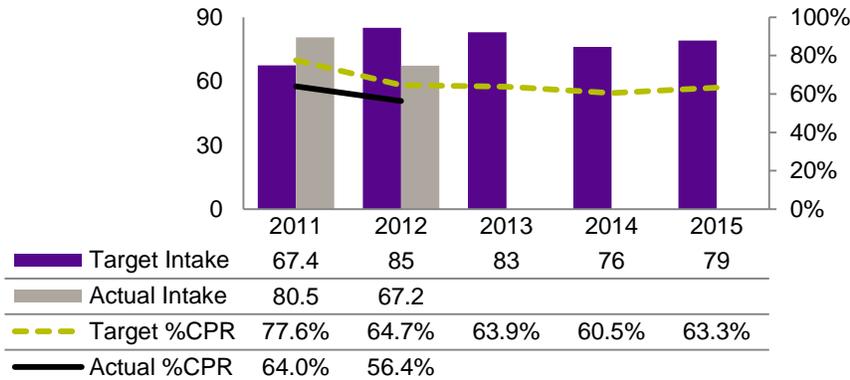
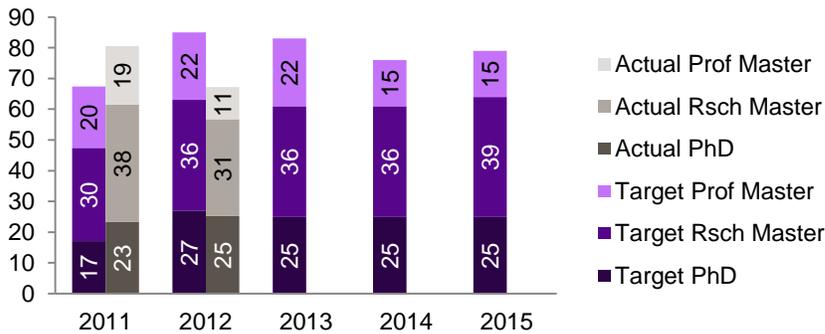


Figure 40: CEE Graduate Intake Plan Performance to Target by Program Type

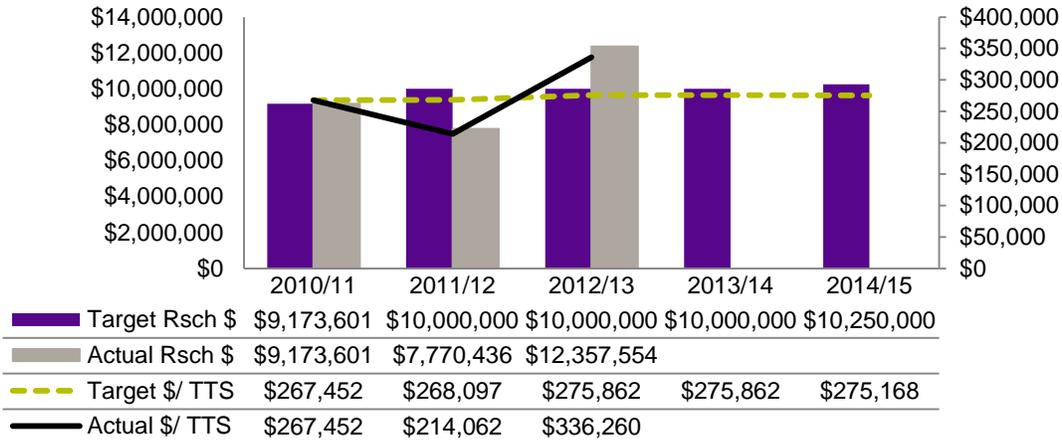


- A Research Methods course is now a compulsory milestone for all new research graduate students.
- The number of graduate courses offered annually remained at approximately 20 courses (600 and 700 level).
- To improve graduate student experience, a new graduate lounge opened in September 2013; to date, 70% of research graduate students have an updated workstation; plans have been developed to select an outstanding CEE TA each term; and opportunities for PhD students who have completed the CTE Certificate in University Teaching program to teach undergraduate courses as a sessional lecturer continue.
- Beginning in fall 2013, we will be offering a writing workshop to assist our graduate students in writing an effective and clear report/paper/thesis.
- Due to administrative changes, developing a revised MEng program has not received the required attention and strategies to address graduate student progression have not been developed. These remain priorities.

D. RESEARCH PLAN

Our research funding rose from \$9.1 million in 2010/11 to \$12.4 million in 2012/13, a 35% increase. CEE accounts for 20% of the overall Faculty of Engineering research funding. Research funding per CEE faculty member in 2012/13 was \$335,803 which is approximately \$96,000 higher than the Faculty average.

Figure 41: CEE Research Plan Performance to Target



- Some minor progress has been made on the identification of emerging research areas, to assist in planning for retirements and other hiring; there remains a significant need for attention to this important initiative.

Electrical & Computer Engineering

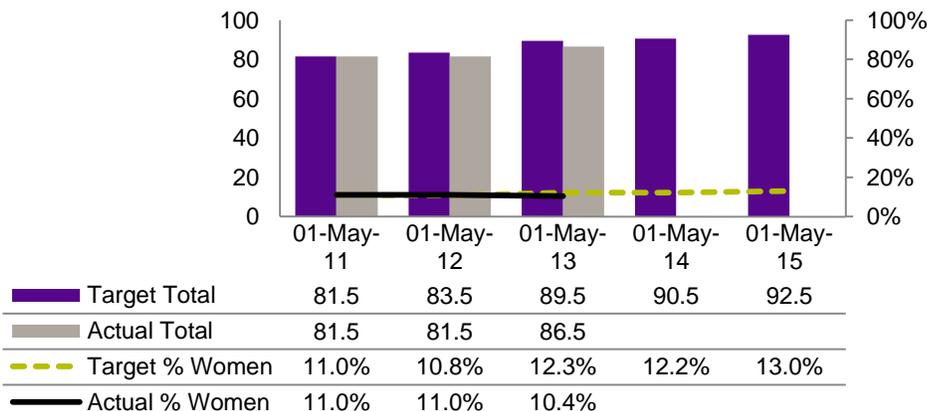
Manoj Sachdev, Chair

Electrical & Computer Engineering (ECE) went through a period of rapid growth in the previous (Vision 2010) plan. Therefore, in this plan our overarching objective is to focus on consolidation and all-around academic excellence. In spite of annual budget cuts and their associated impact on our operations, the department has made substantial progress towards its Vision 2015 targets.

A. FACULTY AND STAFF PLAN

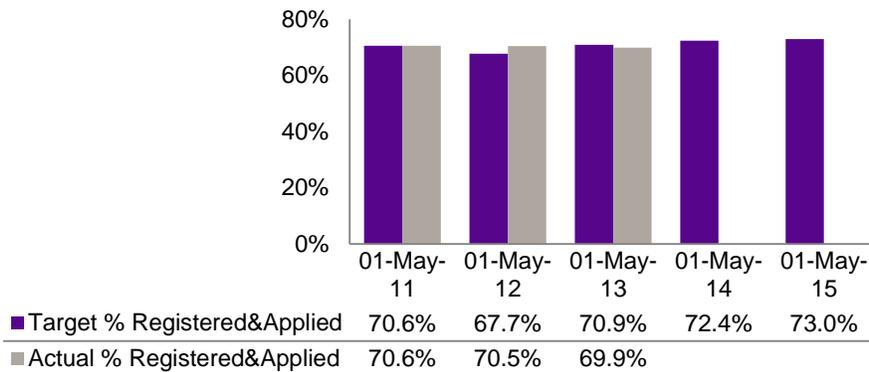
- Figure 42 shows steady progress toward ECE Vision 2015 faculty complement targets: we have hired six faculty members since January 2012 and three more are scheduled to start in the next six months.
- Hiring of female faculty members remains a challenge in ECE disciplines, despite our proactive efforts.

Figure 42: ECE Faculty Complement Plan Performance to Target



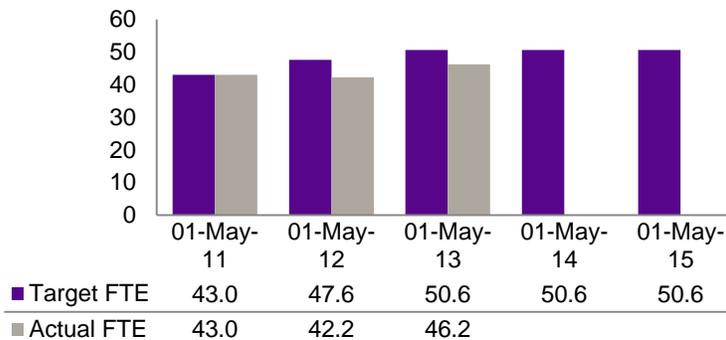
- Figure 43 shows good progress on faculty registration; this is likely to improve as we require our new hires to apply for PEng status as soon as possible.

Figure 43: ECE Regular Faculty PEng Status Performance to Target



- Per Figure 44, we have hired four of the staff positions identified in the Vision 2015 plan.
- The department continues to see relatively high turnover in its staff positions; the new position of Administrative Officer, filled in June 2012, has implemented measures to reduce staff turnover.

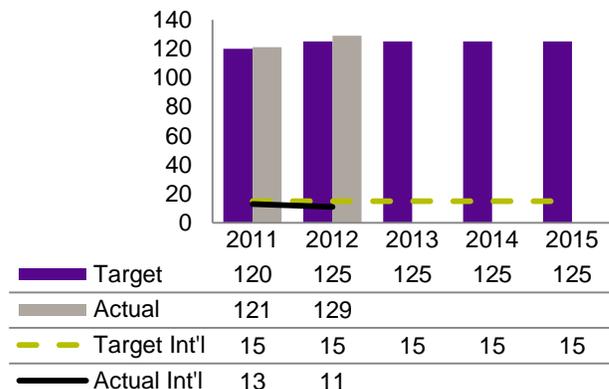
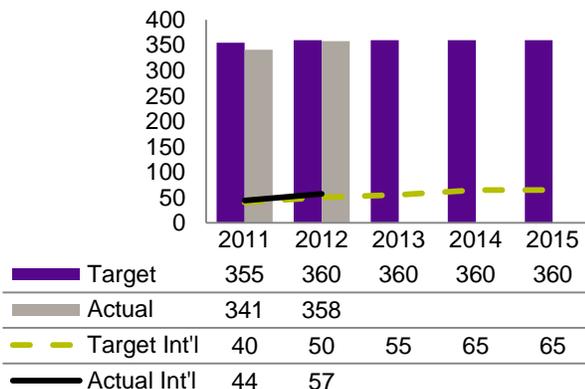
Figure 44: ECE Staff Complement Plan Performance to Target



B. UNDERGRADUATE STUDIES PLAN

ECE is responsible for 2487 undergraduate students, an increase of 3.5% from 2010/11. This includes three cohorts of students enrolled in electrical engineering and computer engineering. The department also participates in three collaborative engineering programs: software engineering with a 50% share, mechatronics engineering with a 20% share, and nanotechnology engineering with a 33% share of students. Figure 45 and Figure 46 show undergraduate intake performance for EE&CE and SE. Mechatronics is reported in the Mechanical & Mechatronics Engineering report and nanotechnology is reported in the Chemical Engineering report.

Figure 45: EE&CE UG Intake Plan Performance to Target Figure 46: SE UG Intake Plan Performance to Target



- We have been gradually increasing the proportion of admitted visa students (from 9.85% in 201/11 to 13% in 2012/13) and have continued to pool EE and CE students to help ensure we admit the best students.

- To help improve retention, a new lecturer position is being created to help with 1A initiatives; some of our best instructors are being assigned to critical first- and second-year math courses; and ECE100A is being modified to incorporate student mentoring and study-skills sessions.
- To help bolster student engagement, ECE now financially supports about 10 student design events each year and supports community-building department activities (e.g. BBQs and paintball games).
- To improve the student experience through infrastructure improvements, we are renovating 400 nasm to become ECE student space this fall and continue to use our \$2.2M Vision 2015 Undergraduate Lab Enhancement Fund allocation to upgrade all of our undergraduate labs.
- To improve teaching quality, we have expanded the role of the Teaching Quality Co-ordinator and introduced meetings with student representatives and instructors to discuss courses taught each term.
- Solid progress has been made in implementing a continual-improvement outcomes-based assessment process as required for future accreditation, to be fully implemented by winter 2014.

C. GRADUATE STUDIES PLAN

Waterloo's ECE graduate program is one of the largest in the country, with approximately 669 graduate students in 2012/13. So far, the department has grown its PhD and research master's program by 7% (heading towards its planned growth of 16% from 2010). From 2011 to 2012, the ECE department has seen overall graduate intake increase by 3.5%, with 4.3% increase in new CPR graduate students. The professional master's program has increased intake by 8% and the research master has increased by 14%. In general our professional master's intake has exceeded our target and our PhD intake is below our target. This is likely due to the decrease in the number of CPR PhD applicants, which dropped from 100 in 2011 to only 54 in 2012.

Figure 47: ECE Graduate Intake Plan Performance to Target by Visa Status

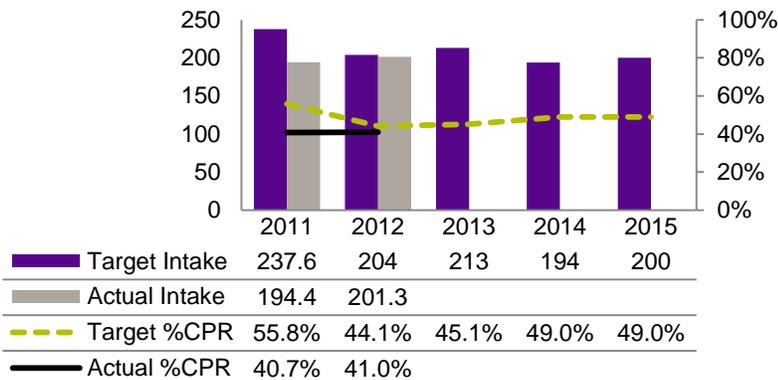
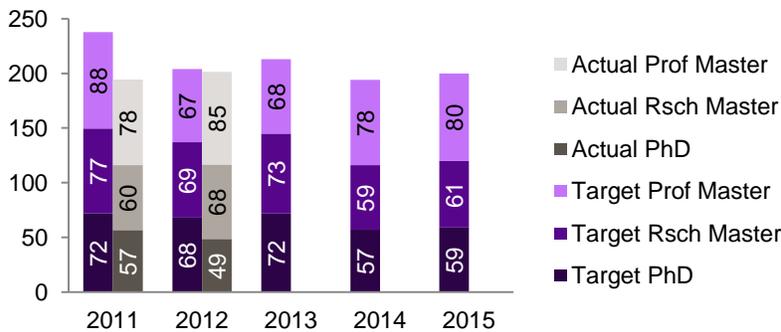


Figure 48: ECE Graduate Intake Plan Performance to Target by Program Type



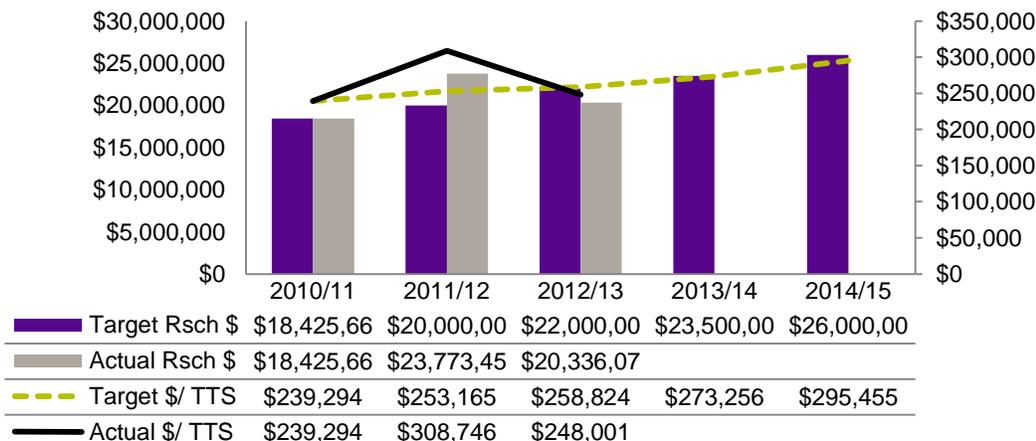
- We are working toward developing a list of core courses for the MAsc and PhD programs and considering the introduction of an additional course credit requirement for the PhD; a decision is expected on both this fall.
- The department continues to discuss the implementation details to increase the rigour of the PhD examination; a detailed implementation strategy should be finalized at our April 2014 retreat.

- To attract CPR students and improve graduate funding, we actively promote graduate studies and NSERC/OGS scholarships to our undergraduate students; subsidize CPR graduate students (a \$300,000 annual expense in the last two years); and have introduced ECE graduate scholarships for research excellence (15x\$1000 awards each term).
- To support our focus on quality in the MEng program, we have tightened admissions criteria and are introducing two new ECE courses in fall 2013 to help incoming MEng and other graduate students improve background skills.
- We have introduced a new objective to improve the student experience, including: renovation of the graduate student lounge; initiation of a student seminar series with \$500 awards for best talks given by students; and introduction of five new TA awards per term.

D. RESEARCH PLAN

As shown in Figure 49, the ECE department earned \$20.3M of research funding in 2012/13, an increase of 10% over 2010/11 but a decrease of 15% from 2011/12, largely due to reduced funding from provincial sources. Our research environment is strong and diversified. In particular, ECE continues to attract significant industrial funding. Despite being less than 30% of the Faculty of Engineering, we attract approximately 40% of industrial funds received by the Faculty. We are aggressively pursuing research funding opportunities in this ever-changing environment, and have created an Associate Chair, Research portfolio to enhance research visibility, intensity, and funding opportunities.

Figure 49: ECE Research Plan Performance to Target



- To enhance ECE’s research visibility, we have established a Distinguished Lecture Series and are enhancing research content in print and on our website (including faculty profiles, a brochure, and web announcements).
- We have established an annual ECE Department Research Award to honour up to two faculty members.
- A committee of the new Associate Chair, Research and nine other faculty members is mandated to enhance all aspects of research, including actively supporting nominations for national and international awards.
- We have renovated student and visitor office space to improve the research environment and are working with the Office of the Dean and the Office of Research to streamline administrative procedures to facilitate research.

E. RECRUITMENT AND OUTREACH

- We have created a Recruitment Co-ordinator portfolio to organize ECE participation in Faculty activities and have financially supported Go ENG Girl and the Canadian Undergraduate Technology Conference.
- A future priority is to develop ECE-specific activities for Engineering Science Quest, the Catalyst Weekend Conference, Go ENG Girl and programs offered by the Centre for Education in Mathematics and Computing.

F. ANNUAL ASSESSMENT AND CALIBRATION

- A full-day retreat was organized in April 2013 to discuss various issues, including Vision 2015 progress.

Management Sciences

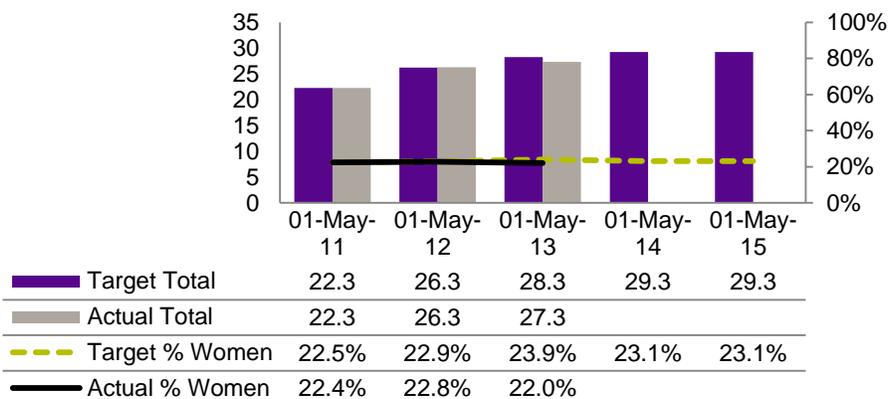
Frank Safayeni, Chair

We have performed well on our Vision 2015 targets. The management engineering program successfully obtained CEAB accreditation and our graduate program received an excellent review from external assessors.

A. FACULTY AND STAFF PLAN

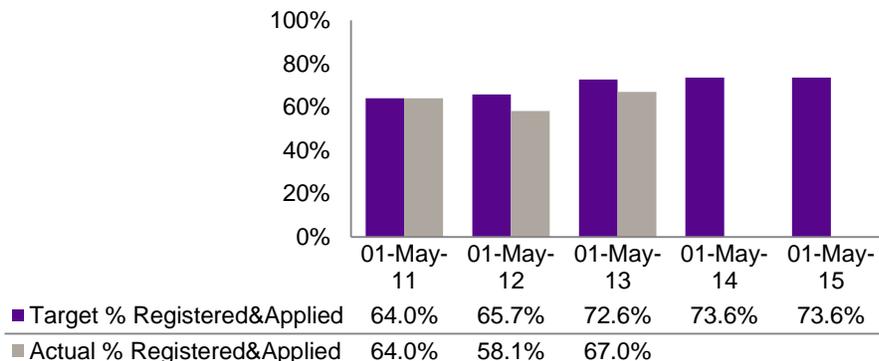
- We are on target for faculty hiring and the proportion of women in our faculty complement.
- Due to a faculty resignation and the end of two definite-term contracts, we currently have four positions yet to fill: three will be filled in 2014 and one will be filled in 2015.
- To meet our goal of a high-performing faculty complement, we continue to prioritize new faculty orientation and assign a mentor to each new faculty member; we have established an Associate Chair, Teaching to work with faculty members to improve classroom performance; and we support intensified research efforts by reducing teaching load from four to three for faculty with very active research portfolios.

Figure 50: MSCI Faculty Complement Plan Performance to Target



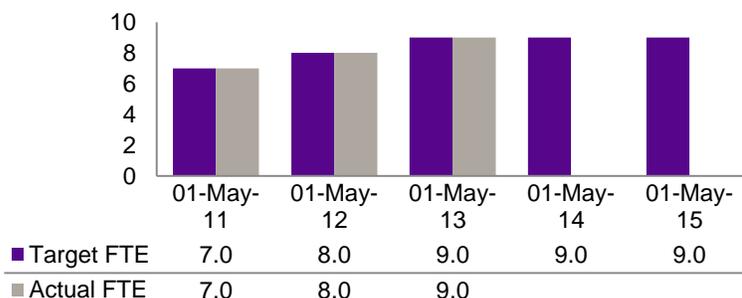
- For CEAB accreditation, one area of deficiency was a lack of sufficient faculty members with licensed professional engineer status. Since 2011, the department has made a great effort to encourage qualified faculty members to apply for PEng.
- By November 2013 we expect to have just over 73% of faculty (updated from the May 1 data used for Figure 51) registered or applied. Except for six faculty members whose disciplines of study make them ineligible for PEng and one very recent hire, all other faculty members will have obtained or applied for PEng.

Figure 51: MSCI Regular Faculty PEng Status Performance to Target



- We have reached our planned full staff complement.
- Reorganization following a retirement has allowed us to establish an Administrative Officer role. This position is helping meet our goal of high-performing staff through regular performance feedback and the promotion of a strong culture of collaboration.

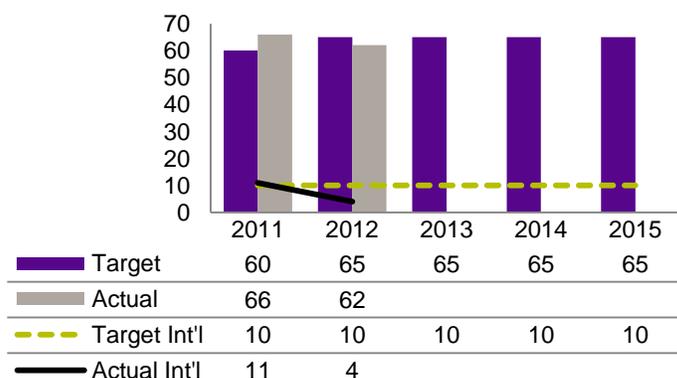
Figure 52: MSCI Staff Complement Plan Performance to Target



B. UNDERGRADUATE STUDIES PLAN

- Management engineering student intake has been very near target since the program’s inception. We remain focused on offering quality education and building the program’s reputation, with intake targets to be held stable through the Vision 2015 plan period.
- Though the data is not final, 2013 intake has exceeded target significantly, posing some logistical challenges for the department. The high acceptance rate of offers this year suggests the program is becoming more popular among high school students and that our admission average can be increased in future.
- A comprehensive plan for outcomes-based assessment has been developed and part of the plan has been implemented. Full implementation will be complete by 2014.
- Our first-year attrition rate is down significantly since 2011 but remains slightly higher than the Faculty average. Significant progress to date results from the establishment of a first- and second-year student advisor (a retired professor hired to help these students transition) and the redesign of MSCI 100. To meet our ultimate goal to reduce our attrition to a level lower than the Faculty average, we will continue these efforts and work to better utilize MSCI 100B.
- To increase average teaching quality, we have introduced a new TA application system and appointed an Associate Chair, Teaching to support the assessment and improvement of teaching in the department.
- To help enhance the student experience, a student chapter of the Institute of Industrial Engineers has been established. Waterloo student delegations have attended the annual student IIE conference in 2012 and 2013 and the chapter has organized students to participate in competitions.
- We are expanding the Management Sciences option offerings with a new course: MSCI 411 “Leadership and Influence” will be offered in spring 2014.
- New goals that have emerged for the management engineering program since we published our Vision 2015 plan include acquiring additional space to build a larger undergraduate laboratory and reviewing the program to make adjustments based on our experience over the past seven years.

Figure 53: MGMT UG Intake Plan Performance to Target



C. GRADUATE STUDIES PLAN

- There is continuing strong demand for on-campus and online coursework master programs. The research master and PhD intakes are steady or increasing as new faculty build their research programs, but funding constraints hamper our ability to meet the Vision 2015 targets.
- Figure 54 shows a continuing difficulty in meeting targets for CPR students. Funding constraints contribute to this problem, but another factor is our relatively slow admission process. To address this issue, we will consider CPR applications first (rather than with the very large number of international applications.)
- Figure 55 shows fluctuations in on-campus master intake resulting from varying acceptance and show rates.
- As new faculty are hired and reach full teaching load, the number of graduate courses is increasing (from 21 courses in 2011/12 to 24 courses in 2013/14). We may split some of our larger foundation courses into two sections, to the extent our limited teaching resources allow.
- As a first step toward introducing MMSc specializations, we will suggest and publish course groupings by theme. In future, we might formalize popular groups as certificates in addition to the MMSc or MASc degree.
- Efforts to increase graduate student funding by encouraging faculty members to seek multiple sources of funding are reflected in an upward trend in funding per supported student (MASc: from \$20,137 in 2009/10 to \$25,280 in 2012/13; PhD: from \$36,330 in 2009/10 to \$39,331 in 2012/13).
- To enhance MMSc online program operations and delivery, the exam process has been migrated to the Centre for Extended Learning; we have introduced standard electronic course critique forms; and on-campus and online teaching is now combined for one course with another planned in winter 2014. A new priority for this program is to develop an annual program feedback form for the program as a whole.
- Since 2012 we have held an annual social event for MMSc online students, alumni and faculty. We plan to extend this event to include on-campus students starting in 2014.
- A future priority for the department is to offer the MMSc degree overseas. We are currently developing an agreement with Sharif University for a joint degree.

Figure 54: MSCI Graduate Intake Plan Performance to Target by Visa Status

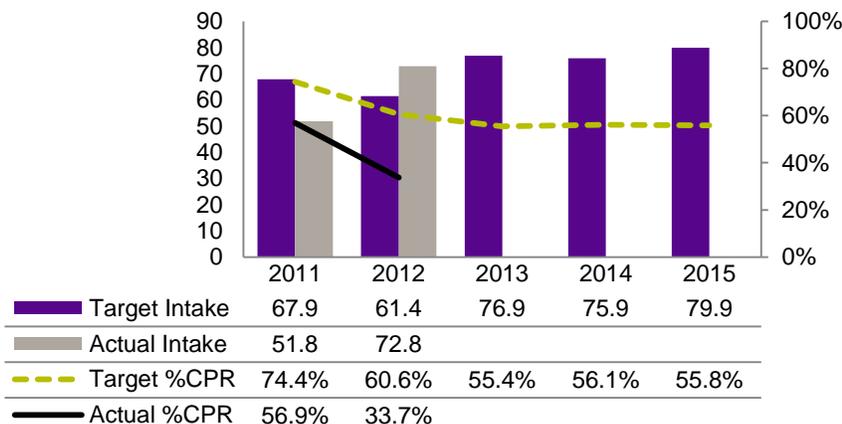
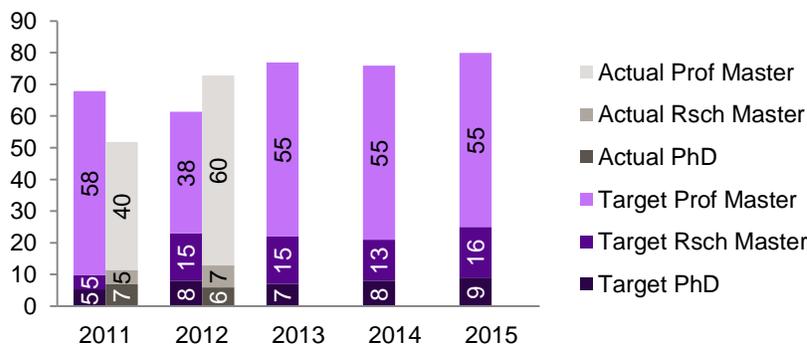


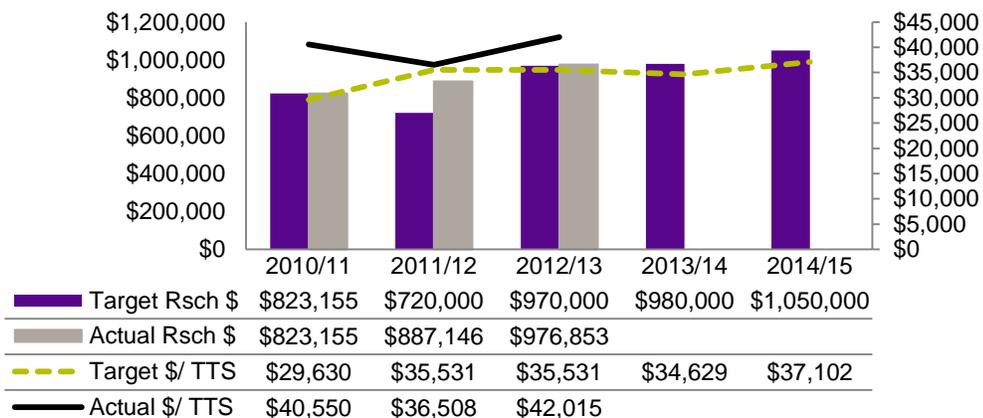
Figure 55: MSCI Graduate Intake Plan Performance to Target by Program Type



D. RESEARCH PLAN

- Our research performance has met targets and has improved compared to 2011/2012. Nevertheless, we would like to increase our funding levels to support more graduate students and increase faculty productivity.
- Our industrial contract funding increased by 83% between 2011/12 and 2012/13. Over the same time, NSERC discovery grants increased by 24% and SSHRC grants increased by 8%.
- To increase funding, faculty members are encouraged to seek more than one funding source; faculty with large supervision loads have been granted a lower teaching load (three courses instead of four); and we have established some contacts with industry (see below).

Figure 56: MSCI Research Plan Performance to Target



E. INDUSTRY RELATIONS

- Industry involvement in the undergraduate program in particular has been strong: industry-sponsored projects have made up 73%, 67% and 77% of total projects in 2011, 2012, and 2013 respectively.
- Plans are underway to expand the annual Management Engineering Design Symposium, which has served as a department open house, to better integrate showcasing capstone projects with networking opportunities.
- We have increased our presence at various industry networking events and have intensified industry outreach efforts through meetings and presentations to representatives from industry and industry networks.

F. ADVANCEMENT

- Alumni are regularly invited to attend and participate in various department events as guests and speakers. In future, we will work to better advertise student activities to alumni and will include alumni in our annual social event (described in the graduate section above).
- We have increased our focus on the creation of professional-quality print and digital promotional material.
- The Management Sciences website has moved to the University's content management system, which has resulted in better advertising of department events and achievements. Our graduate student web pages have been significantly enriched, and plans are underway to work with Faculty communications staff to improve web content for prospective undergraduate students.

Mechanical & Mechatronics Engineering

Jan Huissoon, Chair

The Department of Mechanical & Mechatronics Engineering continues to work toward its Vision 2015 initiatives to improve the learning experience at both undergraduate and graduate levels. We must continue to attend to space availability, which is an ongoing issue, especially for our graduate students.

A. FACULTY AND STAFF PLAN

Our faculty complement is currently behind target due to delays caused by administrative changes and unanticipated issues with graduate program approvals. We anticipate our staff complement will reach target in fall 2013.

Figure 57: MME Faculty Complement Plan Performance to Target

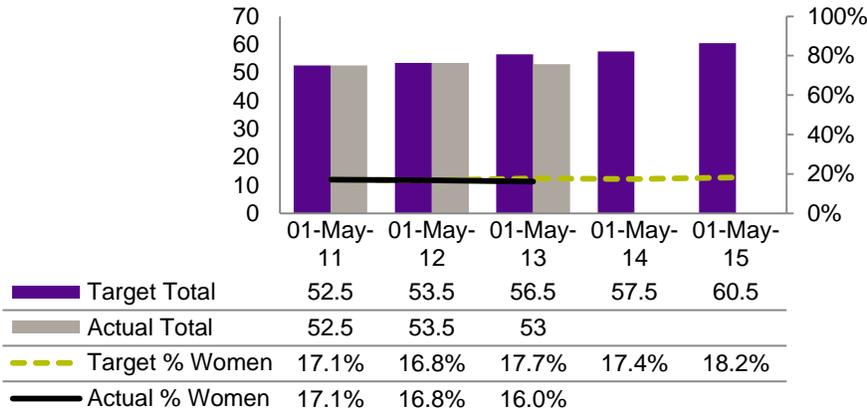
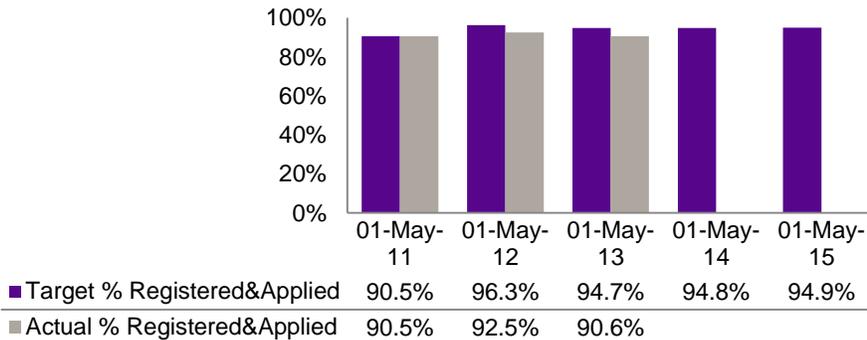
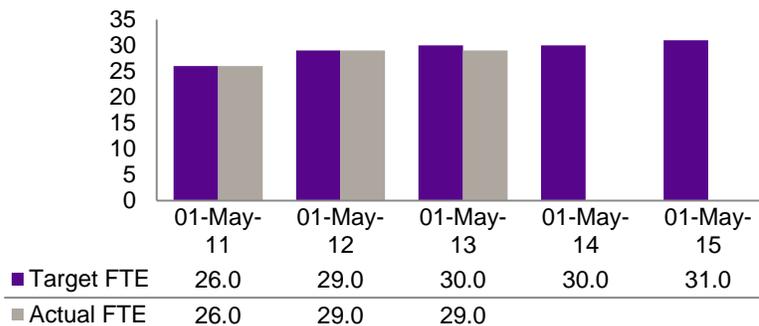


Figure 58: MME Regular Faculty PEng Status Performance to Target



- A new IRC in welding has been conditionally awarded by NSERC, and a position resulting from a faculty retirement will be filled in the emerging area of biomechanics.
- All but four faculty regular members currently either hold or have applied for a PEng license (92.5%).

Figure 59: MME Staff Complement Plan Performance to Target



- Consistent with our goal to provide professional development and training, technical staff spent an average of 24 hours and attended an average of eight courses each for training and skills upgrading in 2012/13.

B. UNDERGRADUATE STUDIES PLAN

Our goal is to maintain the current intake level of mechanical students and to increase the enrolment of mechatronics students as this program expands to eventually reach two full cohorts, beginning in 2014.

Figure 60: MECH UG Intake Plan Performance to Target

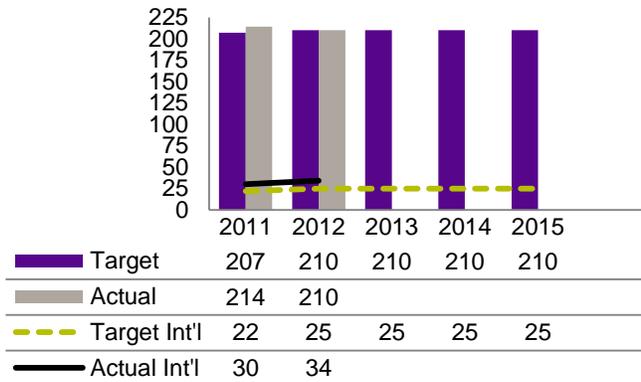
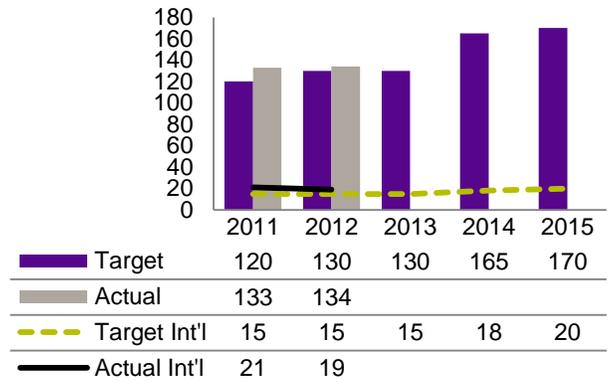


Figure 61: MCTR UG Intake Plan Performance to Target



- Although data isn't yet final, our 2013 intake targets have been significantly exceeded in both programs.
- Steps have been taken toward our goal of establishing an Engineering Clinic in our undergraduate programs: An Engineering Clinic Committee has been established and the hiring process is underway for an associated lecturer position and technical support position.
- To improve the undergraduate experience, we have appointed a Teaching Chair; established a task force focused on improving the first-year experience with curriculum revisions in 1B; revised the final-year design project for mechanical students; and enhanced the annual final-year design project symposium.
- Over \$815,000 has been spent over two years to upgrade and improve undergraduate lab equipment.

C. GRADUATE STUDIES PLAN

We have been successful in meeting performance targets in recruiting domestic MSc and MEng students, although domestic PhD recruitment remains a challenge.

Figure 62: MME Graduate Intake Plan Performance to Target by Visa Status

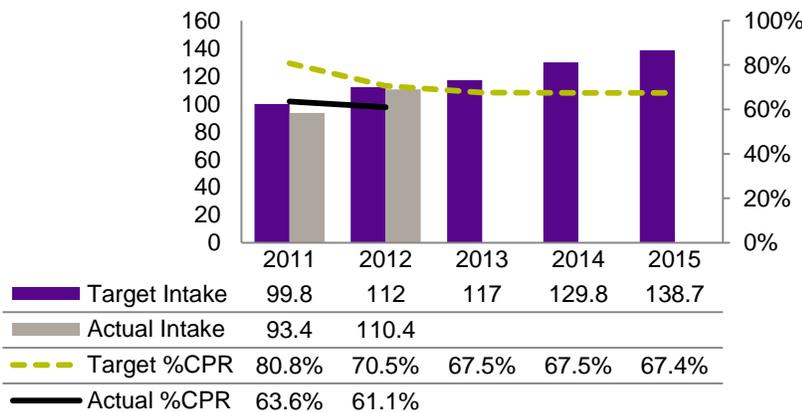
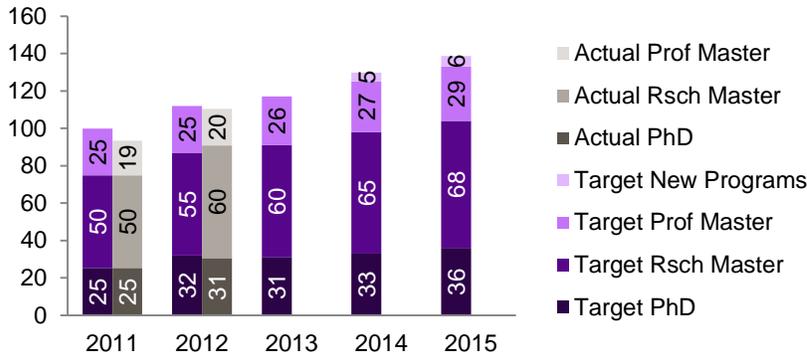


Figure 63: MME Graduate Intake Plan Performance to Target by Program Type

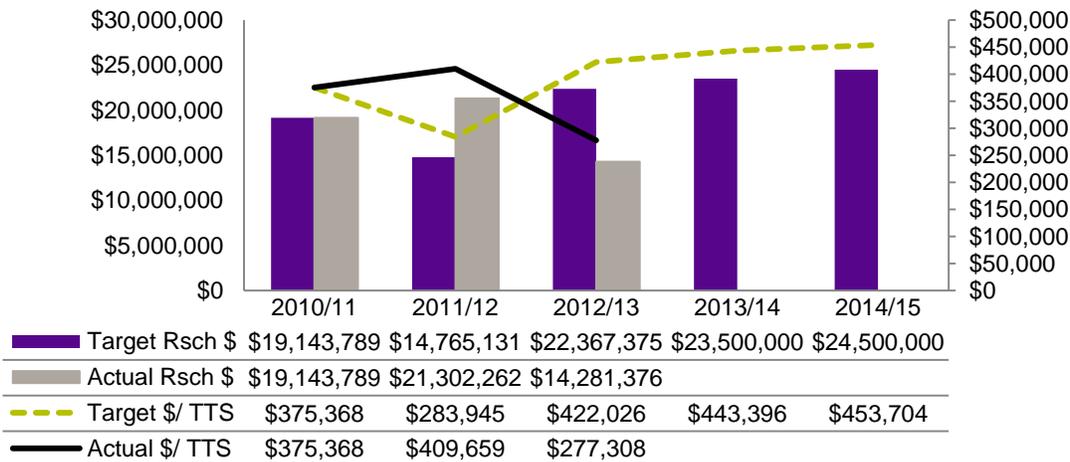


- The E5-Live facility has been installed and used for several online graduate courses in trial mode.
- The course-based Green Energy MEng certificate, which received final approval in fall 2013, is expected to attract approximately 30 students each year.
- The Mechatronics MEng program has been delayed at the Faculty level. Issues are expected to be resolved and a fall 2014 launch is anticipated.

D. RESEARCH PLAN

While there is an underlying base of fairly consistent research funding, the success of major research proposals is the primary factor that has caused variation in our targets and performance in recent years. Our objective is to encourage and support expansion of base funding by means of facilitating industry interaction, while simultaneously accommodating our top researchers in their major research applications and rewarding their success.

Figure 64: MME Research Plan Performance to Target



- We have identified five key research areas for the department: automotive, green energy, mechatronics, MEMS/ μ fluidics, and welding.

E. PHYSICAL SPACE PLAN

- Our objective to create new space and explore off-campus rental has not been achieved. In fact, we have effectively reduced available space in order to accommodate shared space for a major CFI project.
- A graduate space utilization program has been developed for better tracking and space planning. This information will be provided to faculty to encourage suggestions for efficiency and/or allocation improvements.

Systems Design Engineering

Paul Fieguth, Chair

On the whole, the past year has been a good one for Systems Design Engineering, and there is significant momentum present in a variety of directions. While some goals have not yet progressed as expected, in no case was the lack of progress due to a change in departmental perspective or a lack of interest. Rather, significant energy was put into the biomedical engineering program, which became the highest priority over the last two years. Priorities for the coming year will include our other undergraduate goals, design goals, and faculty and staff hiring.

A. FACULTY AND STAFF PLAN

It is important to note that Figure 65 and Figure 67 include some initial growth tied to the new biomedical program. This growth (and the timing thereof) is dependent on the program’s approval (see Section E, below). Two faculty positions are currently in search. Our staff complement has seen significant change over the last two years, particularly on the technical side. We have reached full complement with the exception of one Design Instructor, the hiring process for which is currently underway.

Figure 65: SDE Faculty Complement Plan Performance to Target

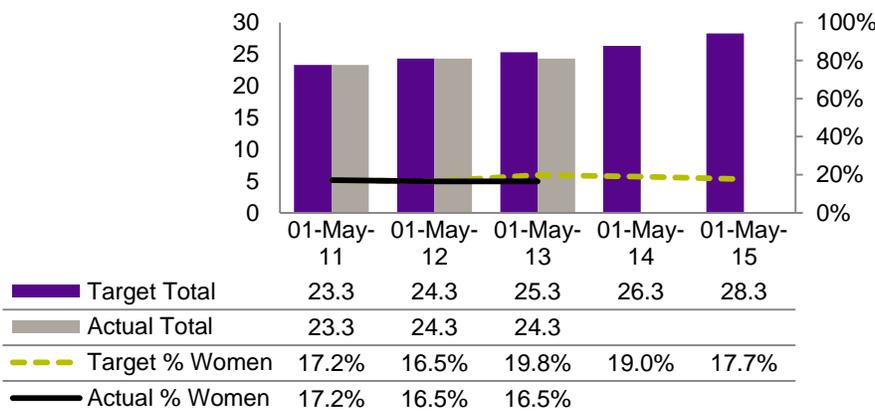
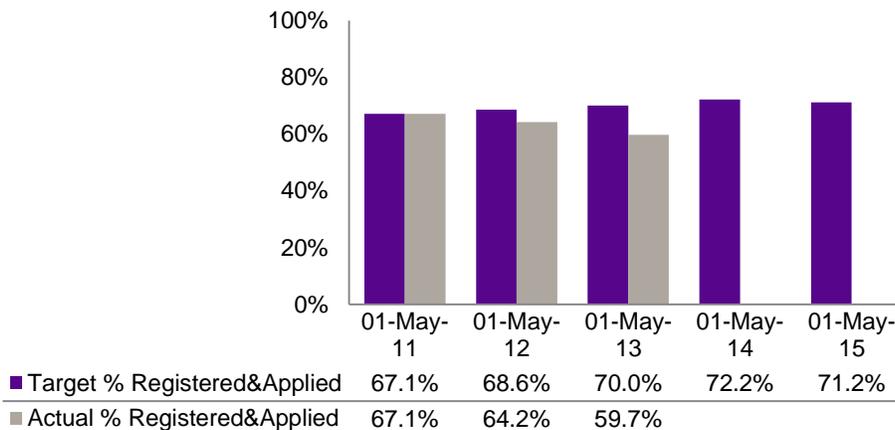
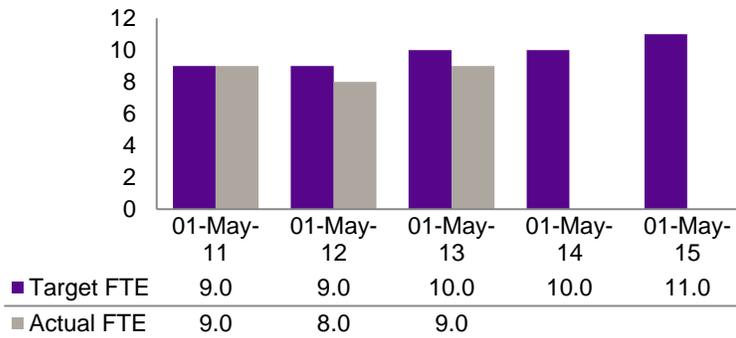


Figure 66: SDE Faculty PEng Status Performance to Target



- As a small department, all mentoring is currently undertaken by the Department Chair. All pre-tenure faculty meet twice annually with the chair. Of them, 60% have a documented career plan and 80% have a documented service plan. Mentoring needs to focus more explicitly on longer-term plans.
- Efforts have been made to widen the range of courses that faculty are able to teach. Teaching flexibility will be critical for the department, long-term, so further effort is needed in this direction.

Figure 67: SDE Staff Complement Plan Performance to Target

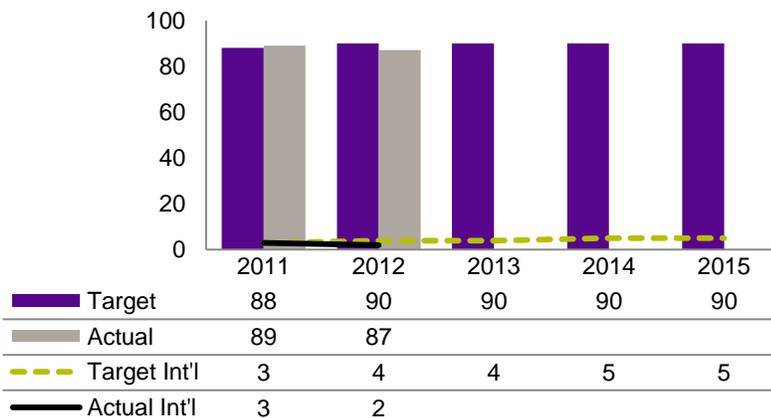


- Four staff members (two technical and two administrative) have been hired since 2011 and one position is currently in search.
- Progress has been made in redistributing tasks among staff and increasing cross-training.

B. UNDERGRADUATE STUDIES PLAN

Systems design engineering undergraduate intake has been stable for many years. Our first-year class size is limited by physical space. We also participate in the collaborative mechatronics engineering program (20% share), which is covered in the Mechanical & Mechatronics Engineering report above. Reported separately in section E below, a key undergraduate goal for the department is our planned launch of a new program in biomedical engineering.

Figure 68: SDE UG Intake Plan Performance to Target



- We have appointed a Teaching Quality Co-ordinator, who has interest in pedagogy and teaching assessment. We continue to work to better co-ordinate courses in a given term.
- We have completely redesigned the laboratory content for all three core lab courses to be built around a single framework. Our next priorities in this major project are to identify hardware for the Controls course, overhaul the Analogue Systems course, and solicit better student feedback regarding the lab experience.
- Non-technical components of the curriculum have been examined as part of the outcomes assessment project, and we anticipate further work here as part of the ongoing process of outcomes development and assessment. A committee was also struck to look at the role of work reports, to promote more consistent grading, and to provide better feedback to students.

C. GRADUATE STUDIES PLAN

For 2012, total graduate intake was above target and CPR intake was on target, in a year where the Faculty as a whole was significantly under target. Plans for continued growth in graduate intake presuppose the hiring of additional faculty, based on the approval and funding of the biomedical engineering program.

Figure 69: SDE Graduate Intake Plan Performance to Target by Visa Status

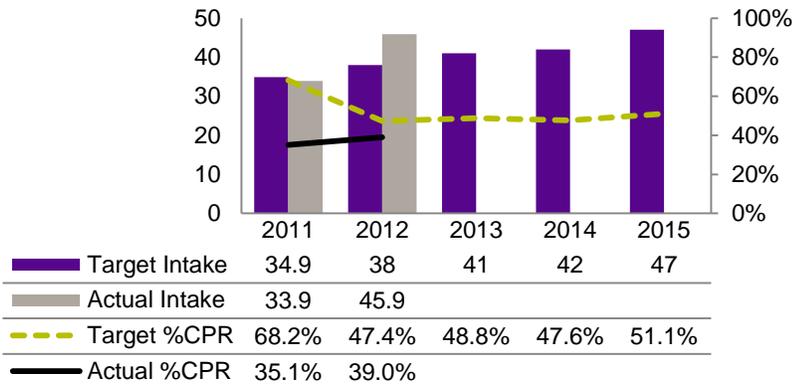
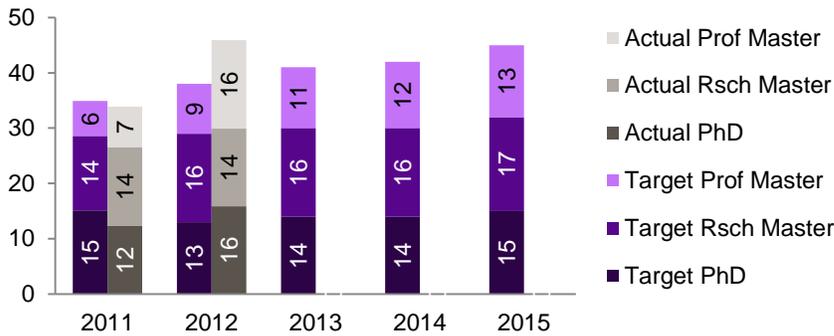


Figure 70: SDE Graduate Intake Plan Performance to Target by Program Type

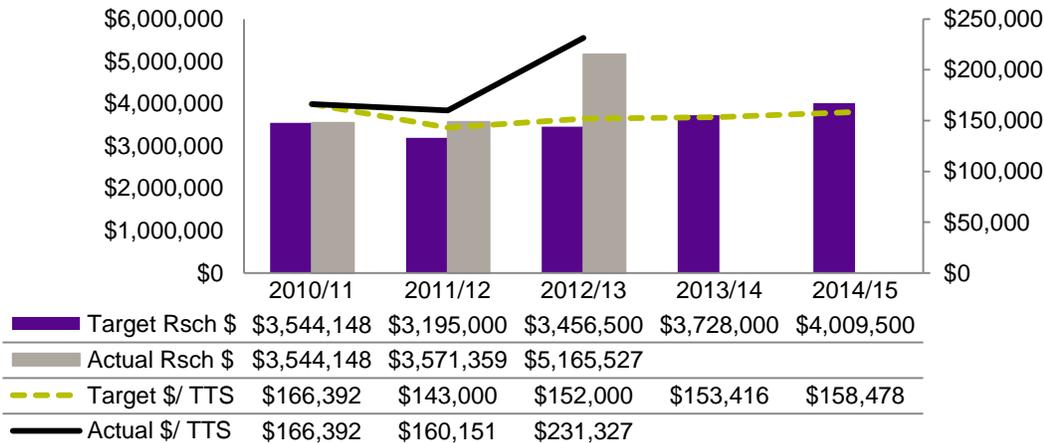


- The MEng program grew significantly in 2012, largely, we believe, because of a more proactive admissions strategy. This strategy continues, and we will await 2013 results to assess this approach.
- To meet our goals related to graduate program quality, a curriculum overhaul is ongoing and we have increased the number of graduate courses offered, in part through a concerted effort to reduce the number of undergraduate electives. Gauging graduate student satisfaction will need to be a focus next year.

D. RESEARCH PLAN

Our research funding for 2012/13 was far above target. We now have a significant number of researchers with active and growing industrial collaborations, leading to very robust funding levels. As with many other targets in this document, the future growth in research funding includes a component due to biomedical hiring.

Figure 71: SDE Research Plan Performance to Target

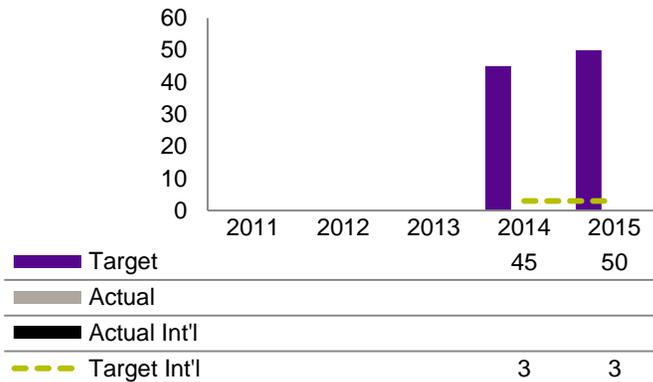


- To meet our goal related to research directions, significant progress was made in defining promising biomedical research directions. In defining a new position to be hired in the socio-environmental area, the department has discussed long-term research directions in this area.
- We have made significant progress on research development in the department: A CRC Tier 2 has been renewed and two new CRCS (one Tier1 and one Tier 2) have been brought to the department.

E. BIOMEDICAL ENGINEERING PLAN

The biomedical engineering targets in Figure 72 are speculative. Although there is still currently the possibility of a 2014 class, whether that comes to pass depends on program approval by the province and a commitment to build additional space by the University. The plan is to initially accept only relatively few students, growing gradually to full complement over eight years. This will give time to grow the program and, particularly, to provide CECA sufficient opportunity to cultivate relationships with related companies for the hiring of co-op students.

Figure 72: Biomedical Engineering Undergraduate Intake Targets



- Resulting from the co-operation of five departments and an enormous amount of work in terms of curriculum design, the proposed undergraduate biomedical engineering program has passed Faculty Undergraduate Studies, Engineering Faculty Council, and Senate Undergraduate. The July 2013 site visit resulted in a very successful and positive external evaluation. Yet required are approval at Ontario Quality Council and approval to construct E7 for the needed space.
- Focus to date has been on the undergraduate program. Progress toward plans for a biomedical engineering graduate program will be essential only once related hiring begins.

F. DESIGN PLAN

- Progress on these initiatives has been delayed in part because of delays in adding a design instructor to the technical staff. Once that hiring process is completed, we expect more attention to design matters.
- Third- and fourth-year design project rubrics have been developed with higher and clearer expectations.
- We have nurtured a modest degree of alumni/industry support for symposium awards and raised the profile of the symposia. A multi-year strategy to sustain support and awareness is yet needed.
- We will be doing a trial run of space allocation for student project/incubator space in the coming year.

G. ADVANCEMENT PLAN

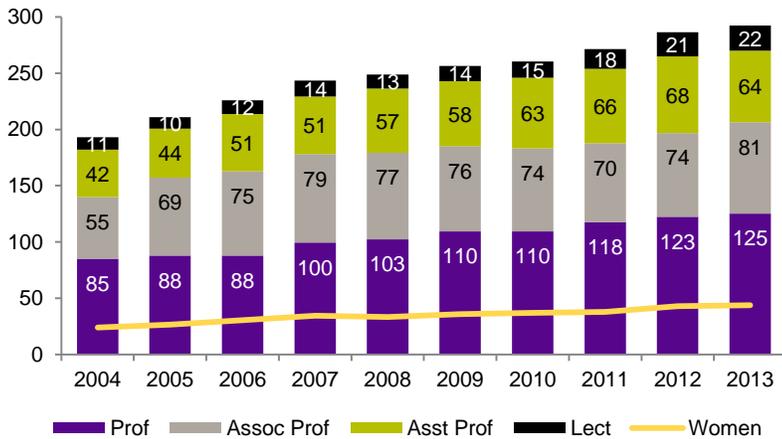
- The Department Chair has become more involved in alumni-related activities, with visits to alumni events in Waterloo, Toronto, and Boston.
- We have had good success in nominating alumni for alumni awards.

IV. Key Metrics & Performance Indicators

The information presented in this section focuses on overview data at the Faculty level. For more detailed information and for data at the department or program level, please refer to the tabular data presented in Appendices A-G.

A. Faculty and Staff

Figure 73: Regular Faculty, 2004-2013



Over the past decade, the regular faculty complement in Waterloo Engineering has grown by 51.5%, and the number of women faculty has increased by 83%.

This includes the addition of the School of Architecture (which had 15 faculty members when it joined Engineering in 2005) and the Conrad Centre for Business, Entrepreneurship and Technology (which had two faculty members when it joined Engineering in 2006).

As of May 1, 2013 Waterloo Engineering's regular faculty complement was 292.3, comprised of 269.8 tenured/tenure-stream faculty and 22.5 lecturers (definite-term and continuing). The proportion of faculty who are women ranged among departments from 8% to 37%, with a Faculty-wide average of 15.1%.

Figure 74: Regular Faculty by Type, 2013

Figure 75: Regular Faculty by Gender, 2013

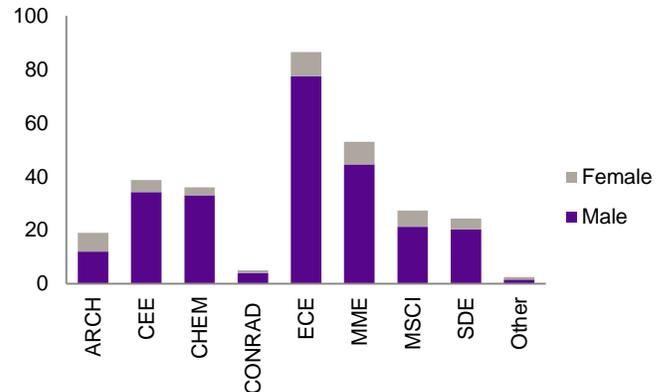
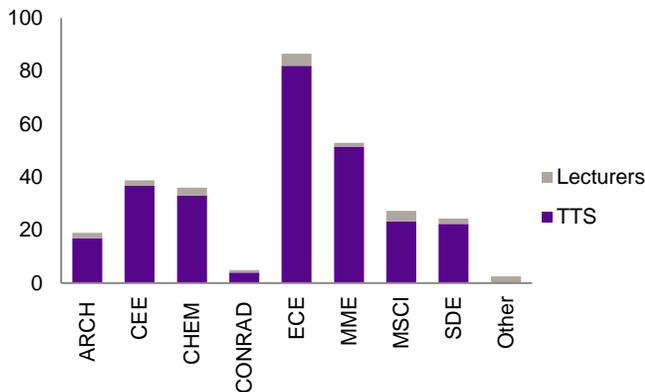
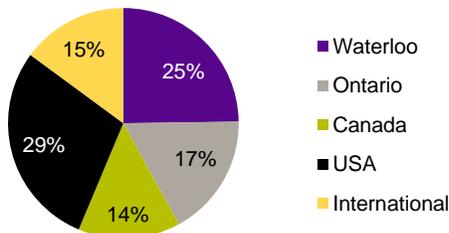


Figure 76: Regular Faculty by PhD School, 2013



Our complement includes faculty members who have earned their PhDs from a wide range of schools (see Figure 76).

As shown in Figure 77, over 77% of faculty in engineering disciplines are registered or have applied for the PEng (including some limited licences). This ranges from 62% to 90% among departments.

While 27% of our faculty members are aged 55+, this is balanced by an almost equivalent share (24%) under the age of 40. We must remain attentive to the significant group (49%) aged 40-55 in our future planning (see Figure 78).

Figure 77: Regular Faculty by PEng Status, 2013

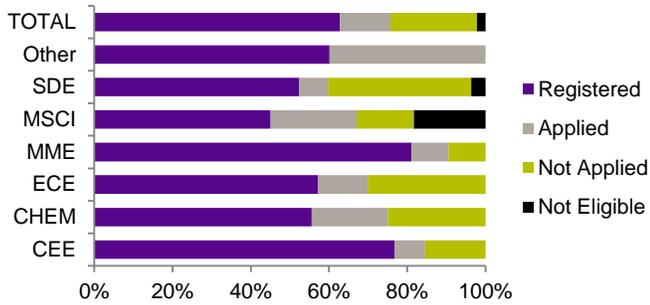
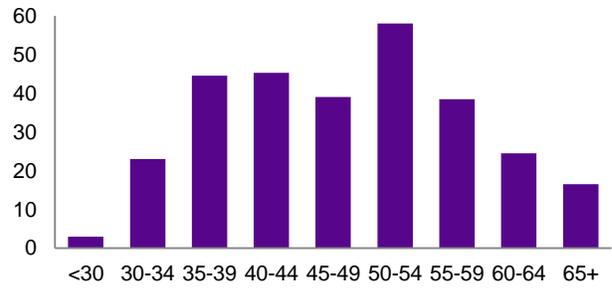


Figure 78: Age Distribution of Regular Faculty, 2013



In addition to our regular faculty complement, the contributions of a wide range of non-regular faculty members (as shown in Figure 79 and Figure 80) enrich our academic and research environment.

Figure 79: Non-regular and Non-faculty Appointments by Department, 2013

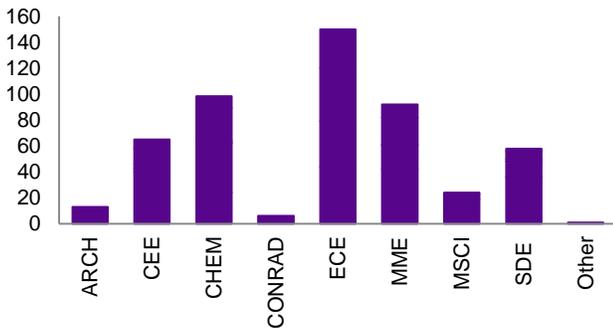


Figure 80: Non-regular and Non-faculty Appointments by Type, 2013

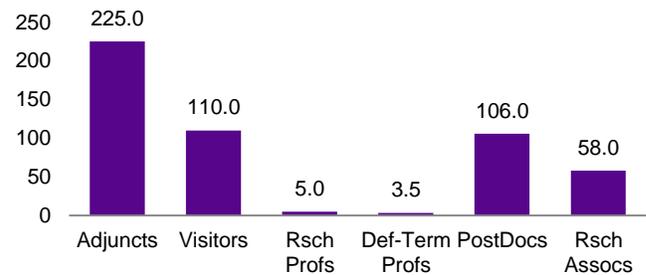
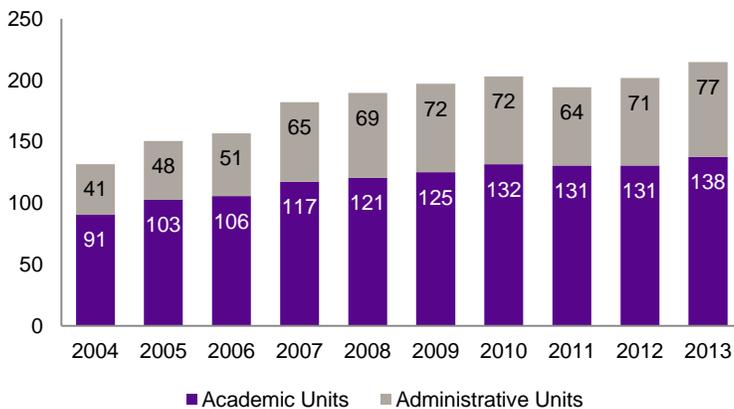


Figure 81: FTE Staff, 2004-2013



The staff complement in Waterloo Engineering grew by 83 individuals or 63% over the past decade. This includes 9.7 staff who joined Engineering with the School of Architecture in 2005 and 2 who joined with the Conrad Centre in 2006.

As of May 1, 2013 there were 137.7 FTE staff members (73.5 technical staff and 64.2 administrative staff) in our academic units and 77.1 (20.8 technical and 56.3 administrative) in our administrative units. The current distribution of staff is shown in Figure 82 and Figure 83.

Figure 82: FTE Staff in Academic Units, 2013

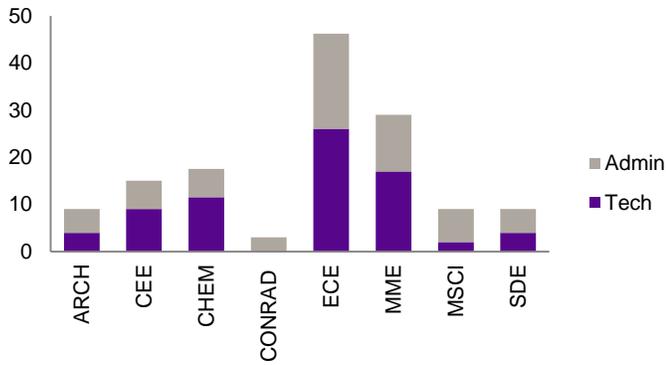


Figure 83: FTE Staff in Administrative Units, 2013

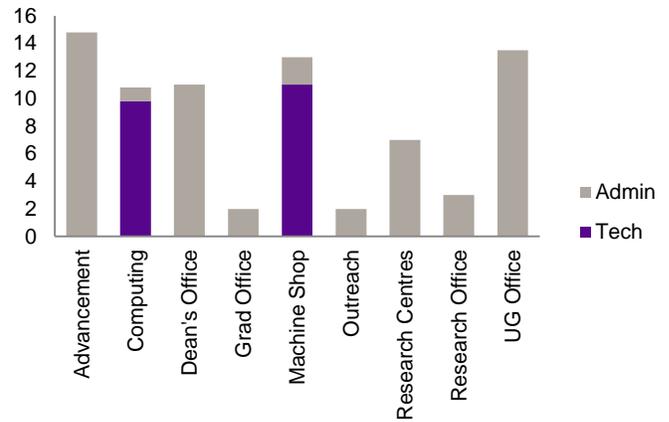
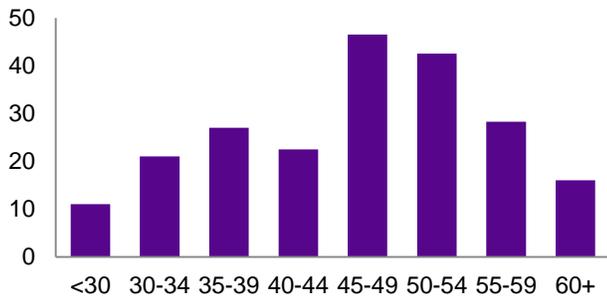
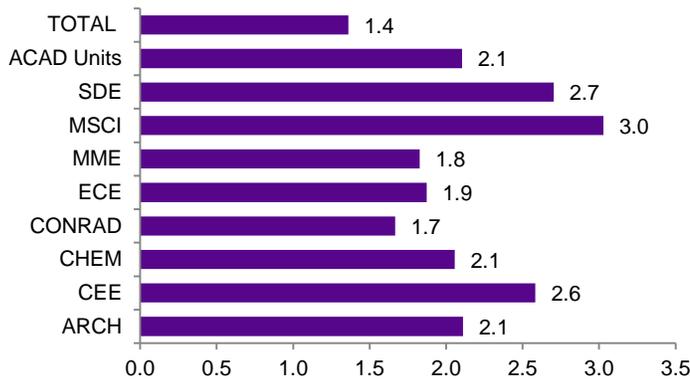


Figure 84: Age Distribution of Staff, 2013



The current age distribution of our staff complement points to a need to plan for increasing staff renewal in the coming years: 21% of our staff is 55 years old and older, and an additional 41% are aged 45 to 55 years old.

Figure 85: Faculty to Staff Ratio, 2013

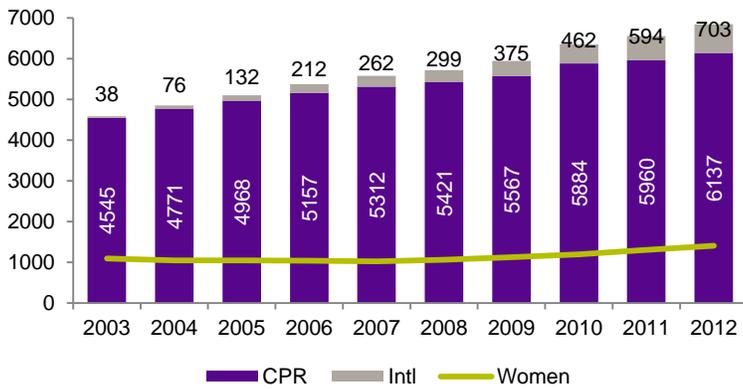


The average ratio of regular faculty members to FTE staff members for the Faculty as a whole (including staff in administrative units, which do not typically have a faculty complement) remains unchanged as of May 1, 2013 at 1.4.

The average across academic units only (i.e. excluding staff in administrative units) was 2.1. Figure 85 shows the distribution of this ratio across academic units, which varies among disciplines due to their varying technical intensity.

B. Undergraduate Studies

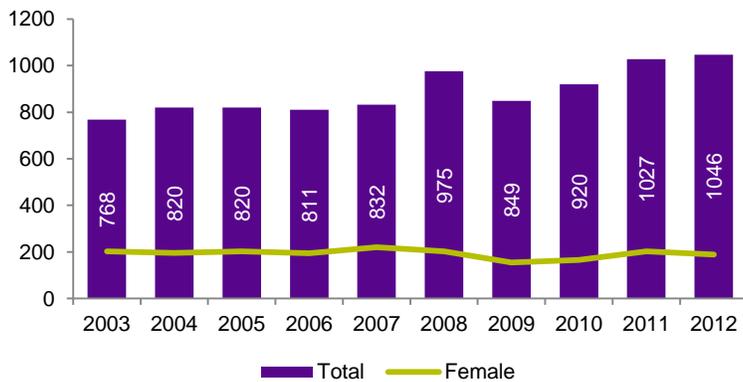
Figure 86: Undergraduate Enrolment, 2003-2012



Over the past decade, our undergraduate enrolment (head count) has increased by just over 49%, or 1592, to a record total of 6840 students as of November 1, 2012. Of that growth, 665 students were international and 317 students were women.

Figure 88 shows the distribution of the fall 2012 undergraduate enrolment by program, visa status and gender. Figure 90 normalizes undergraduate enrolment to regular faculty.

Figure 87: Undergraduate Degrees Granted, 2003-2012



Over the past 10 years, degrees awarded annually to Waterloo Engineering undergraduate students increased by 36%. We reached an all-time high number of degrees granted in 2012, awarding 1046 undergraduate degrees.

Figure 89 shows the distribution of undergraduate degrees granted in 2012 by program and gender.

Figure 88: Undergraduate Enrolment, Fall 2012

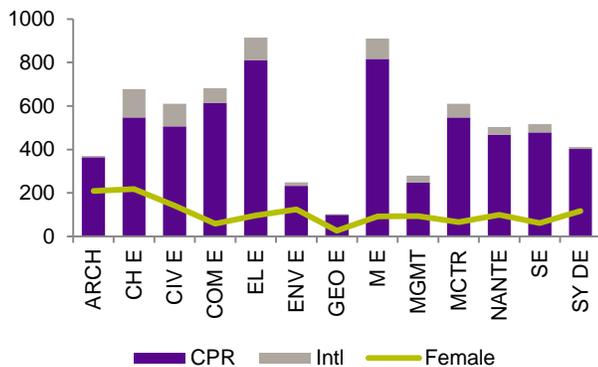


Figure 89: Undergraduate Degrees Granted, 2012

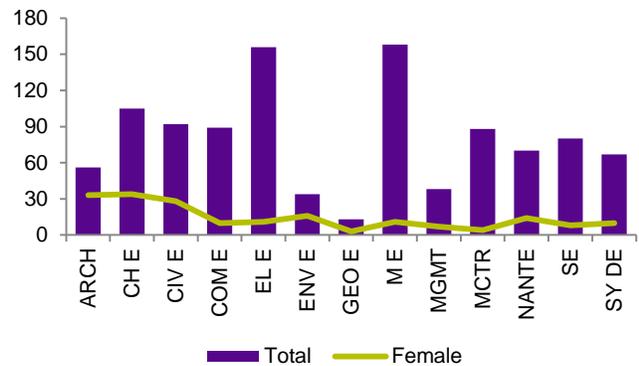
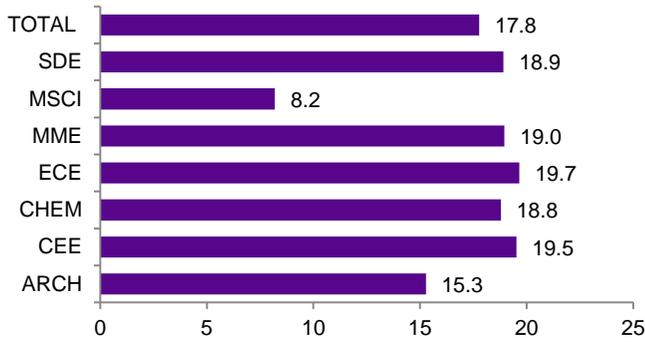


Figure 90: Undergraduate Students per Regular Faculty Member, 2012/13



Widely recognized as one indicator of undergraduate program quality, the ratio of undergraduate students to regular faculty members is a metric we monitor annually. For 2012/13, this ratio at the Faculty level is 17.8, up slightly from 17.6 in 2009/10. The distribution of this ratio by department is shown in Figure 90. Management Sciences is anomalous here because it was home to a large established graduate program and undergraduate option before launching the undergraduate management engineering program in 2007.

Figure 91: Final Entering Grade Averages, 2007-2012

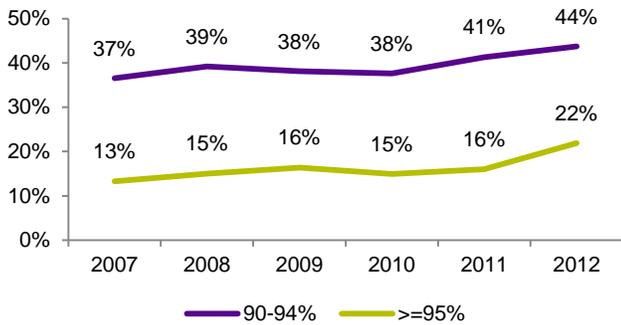


Figure 91 depicts a steady increase over the past six years in the proportion of undergraduate students entering Waterloo Engineering with incoming final high school averages over 95% and between 90-94%. The record high in 2012 indicates that 65.6% of entering students had a final high school average of 90% or higher, an affirmation of the exceptionally high quality students we attract to our renowned undergraduate program.

As our undergraduate student enrolment increases, so does the number of work terms required to fulfill our commitment to co-operative education for all undergraduates. In 2012, the number of required work terms reached an all-time high of 7686; this is an increase of almost 2000 work terms (or 35%) over the number required eight years ago (see Figure 92). Despite this substantial increase, we maintain excellent employment rates. In 2012, the overall employment rate was 96.5%, consistent with performance that has ranged from 95.9% to 98.5% since 2005. The distribution of work terms by program for 2012 is shown in Figure 93.

Figure 92: Co-op Employment, 2005-2012

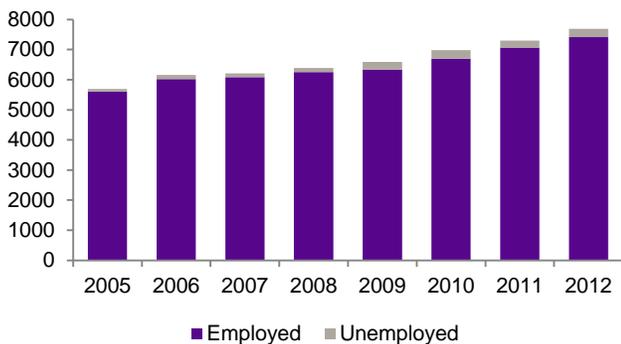
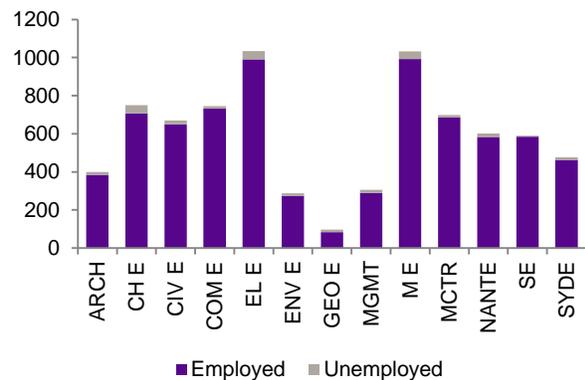


Figure 93: Co-op Employment by Program, 2012



Work terms afford engineering undergraduate students at Waterloo the unique opportunity to explore multiple work settings over the course of their studies, including global experiences. As shown in Figure 94 and Figure 95, over the past eight years the number of work terms completed outside of Canada has increased by 62%, reaching a record total of 1074 in 2012.

Figure 94: Co-op Employment by Location, 2005-2012

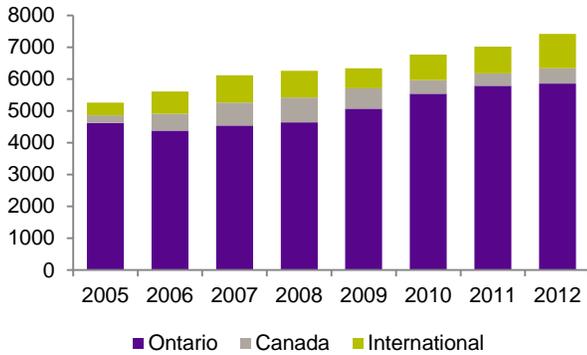
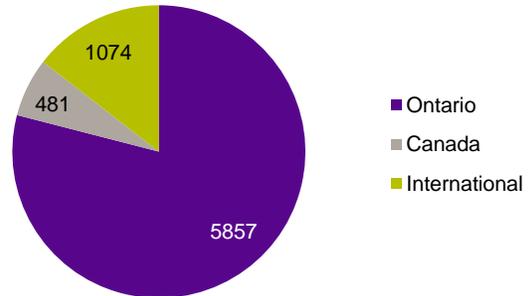
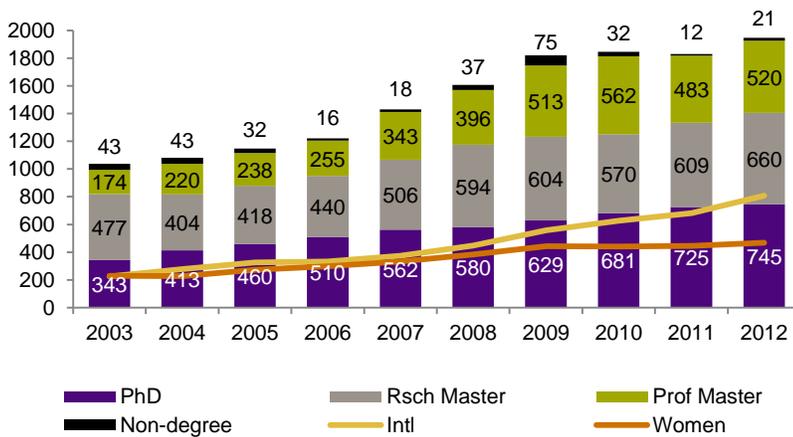


Figure 95: Co-op Employment by Location, 2012



C. Graduate Studies

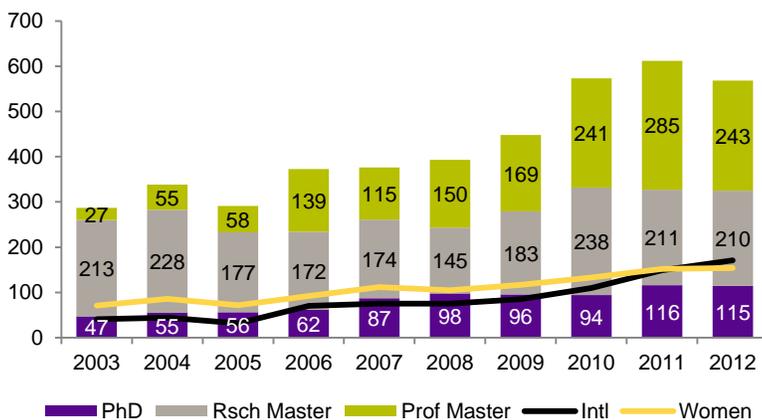
Figure 96: Graduate Enrolment, 2003-2012



Over the past 10 years, our graduate enrolment (head count) has increased by just over 54% or 402 students to a record total of 1946 on November 1, 2012. Over that period, PhD enrolment increased by 54%, professional master enrolment increased by 67%, international student enrolment increased by 72% and the enrolment of women kept pace with overall enrolment increases.

Figure 98 shows the distribution of fall 2012 graduate enrolment by department, visa status and gender. Figure 99 normalizes that data to tenured-tenure/stream faculty.

Figure 97: Graduate Degrees Granted, 2003-2012



Over the past 10 years, degrees awarded annually to Waterloo Engineering graduate students increased by 98%. Reflecting our increased research intensity, PhD degrees granted increased by 145%. The largest growth was in professional master degrees granted (800%).

Figure 100 shows the distribution of the 568 graduate degrees granted in 2012 by department, degree type and gender and Figure 101 normalizes that data to tenured-tenure/stream faculty.

Figure 98: Graduate Enrolment, Fall 2012

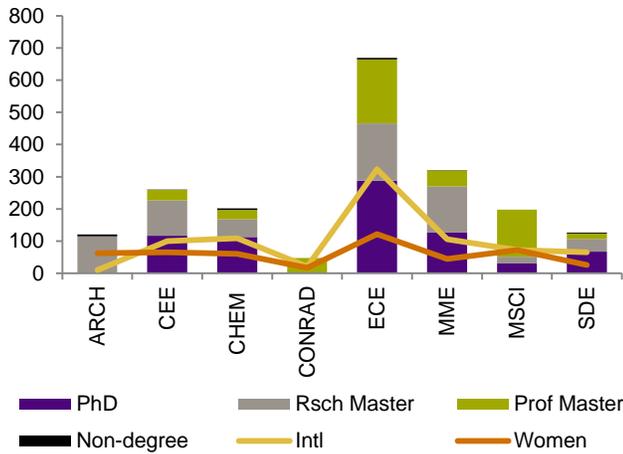


Figure 99: Graduate Students per T/TS Faculty, 2012/13

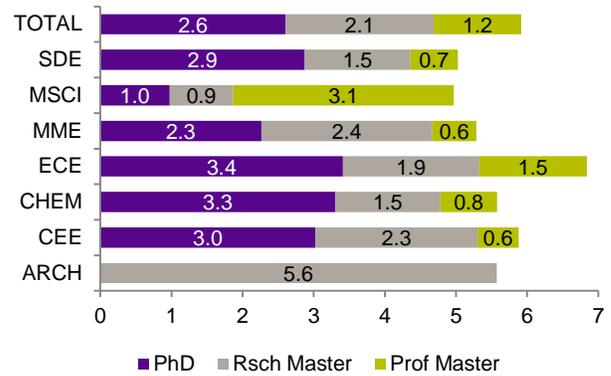


Figure 100: Graduate Degrees Granted, 2012

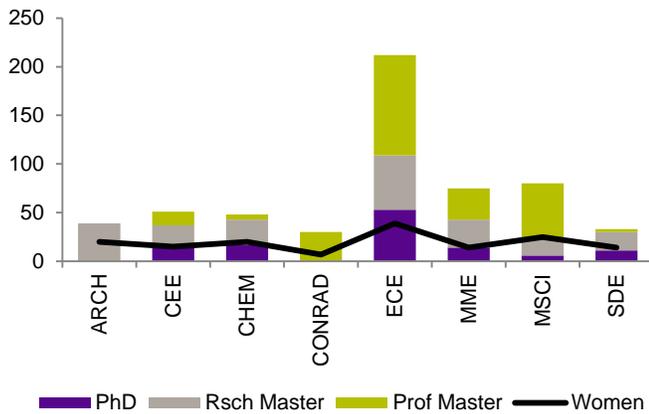
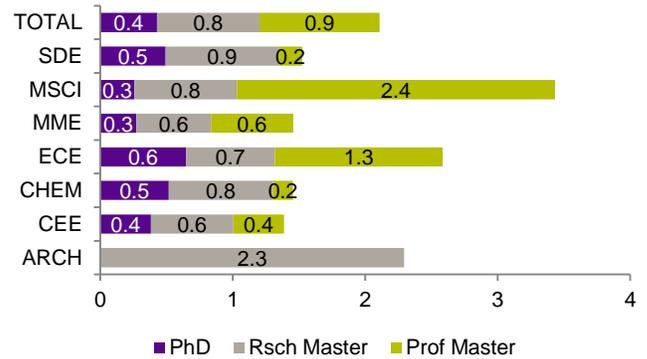


Figure 101: Graduate Degrees Granted per T/TS Faculty, 2012/13



We track our average graduate student support (as shown in Figure 102 and Figure 103) because financial support for research graduate students has an important impact on the quality of our graduate student experience and on the competitiveness of our graduate recruitment efforts. Additionally, the proportion of students holding external scholarships can be considered a metric of student quality.

Figure 102: Graduate Fiscal Support, 2012/13: PhD Students

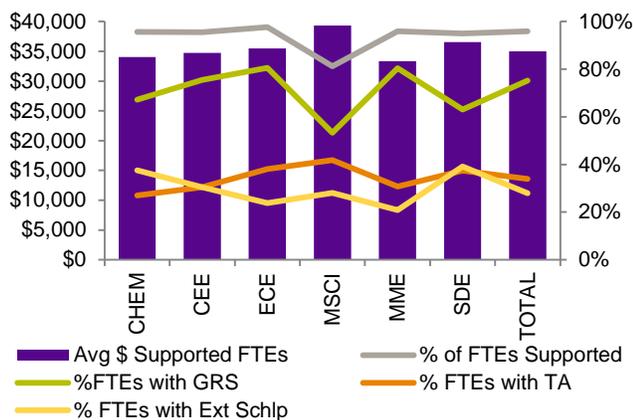
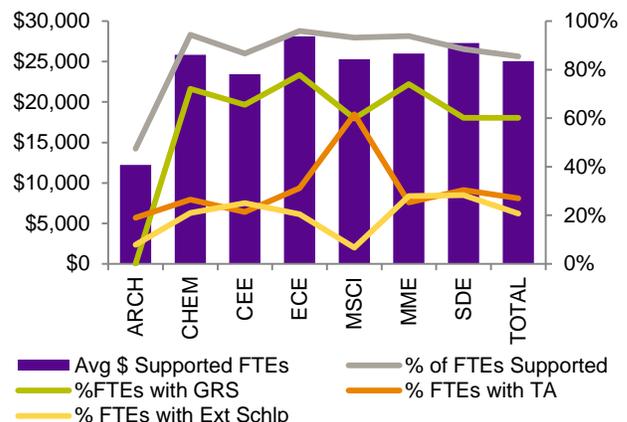
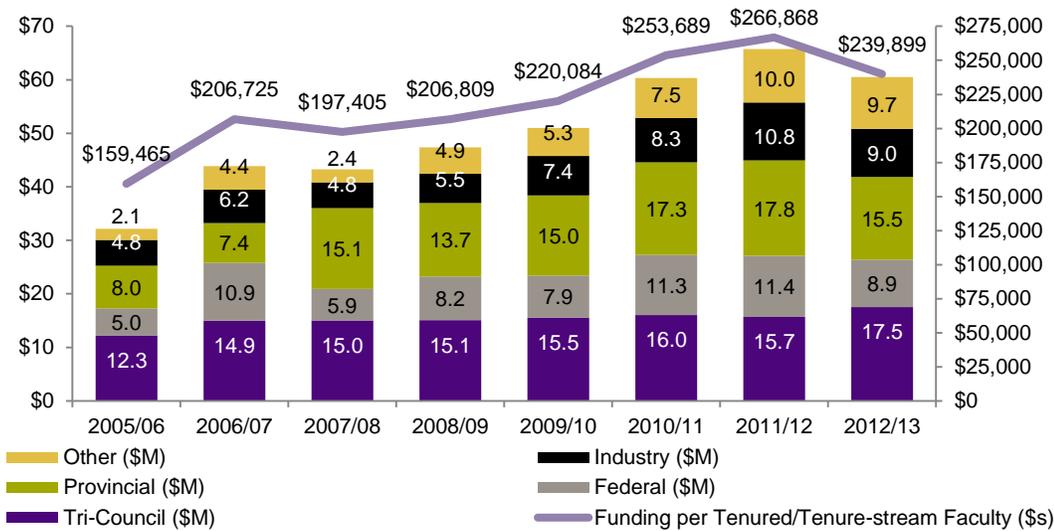


Figure 103: Graduate Fiscal Support, 2012/13: Research Master's Students



D. Research

Figure 104: Research Funds by Sector (\$millions) and per T/TS Faculty, 2005/06-2012/13



Over the past eight years, research funding to Waterloo Engineering faculty members has increased by 88%, or by 50% per tenured/tenure-stream faculty. Over that same time period, Tri-Council funding increased by 43% while industry funding increased by 88% and provincial funding increased by 93%. In 2012/13, Waterloo Engineering external research funding totalled \$60,496,549 or \$239,899 per tenured/tenure-stream faculty member. Waterloo Engineering faculty members earned a total of 1361 research awards, or 5.4 per tenured/tenure stream faculty member in 2012/13. The relative distribution of funding and awards by sector is shown in Figure 105 and Figure 106.

Figure 105: Research Funds by Sector (\$millions), 2012/13 Figure 106: Research Awards by Sector, 2012/13



In 2012/13, 29% of research funding and 34% of research awards came from the Federal Tri-Council granting agencies, largely NSERC. The distribution of Tri-Council funding and of NSERC funding is provided in Figure 107.

Figure 107: Tri-Council Funding and NSERC Funding by Type (\$millions), 2012/13

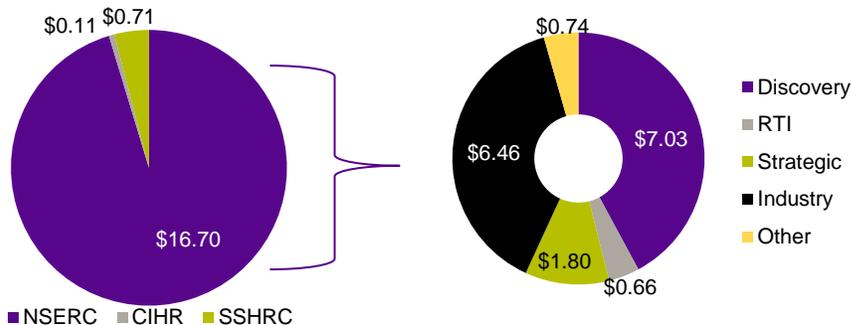
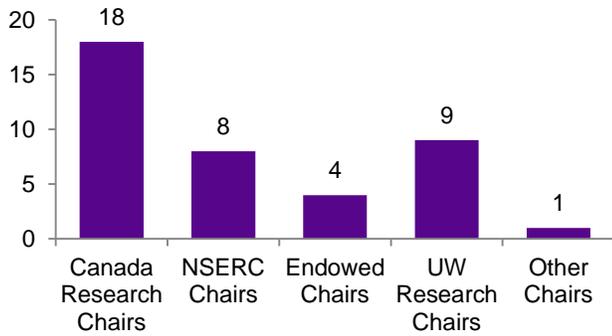


Figure 108: Research Chair Holders, 2013

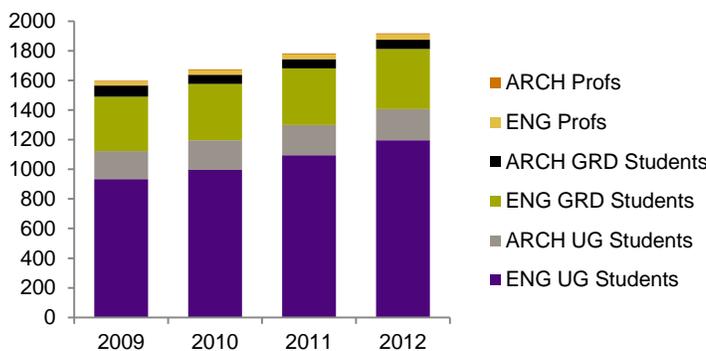


Funding cannot be our sole measure of research success. As of May 1, 2013, 40 Waterloo Engineering faculty members (15% of the tenured/tenure-stream complement) hold major research chairs. An additional four faculty members are university professors.

Waterloo Engineering continues to work with a university-wide working group to define appropriate bibliometric tools and indicators to measure scholarly output and research impact. We anticipate being able to analyze and publish such metrics in our fall 2014 report.

E. Women in Engineering

Figure 109: Women in Engineering and Architecture, 2009-2012



The total number of women students and faculty in the Faculty of Engineering has increased by 20% over the past four years, to reach 1918.

As we work to increase the participation of women in engineering disciplines specifically, it is a positive indicator that the number of women at all levels in engineering programs has increased: undergraduate students have increased over 28% to 1197; graduate students have increased almost 11% to 407; faculty have increased 31% to 36.

Figure 110 and Figure 111 provide details of the current participation of women in our engineering programs and in our School of Architecture.

Figure 110: Women in Engineering Programs, 2012

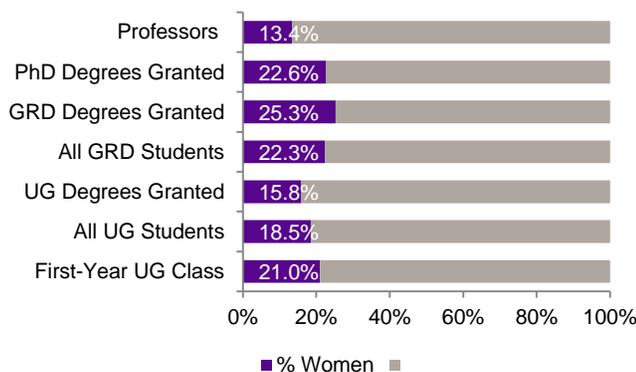
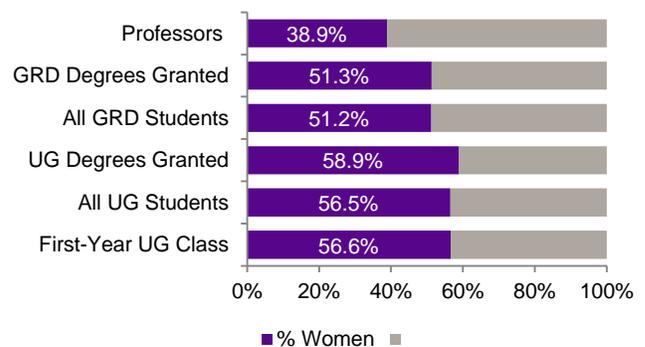


Figure 111: Women in Architecture Programs, 2012



F. Internationalization

Over the past four years, international student enrolment in undergraduate programs has increased by 86% to 698 and in graduate programs by 45% to 806. As seen in Figure 114, international students now account for almost 11% of undergraduate students and over 41% of graduate students. Our efforts to increase international opportunities for undergraduate students have proven successful, with the number of international co-op terms growing by 69% (to 1074) and outgoing exchange students growing by 23% (to 91) over the past four years.

Figure 112: International Students, 2009-2012

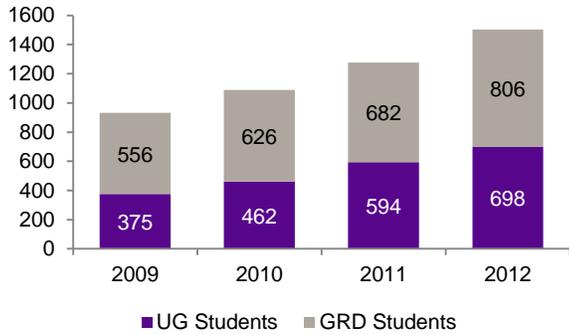


Figure 113: International Opportunities for Undergraduate Students, 2009-2012

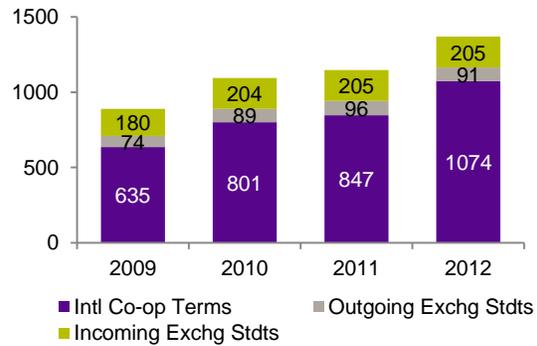


Figure 114 outlines the proportion of international students in the Faculty of Engineering. Figure 115 shows change in the composition of our industrial research funding by source over the past three years, showing a marked increase in the proportion of industrial research funding that has come from outside Canada in the past two years.

Figure 114: International Student Metrics, 2012

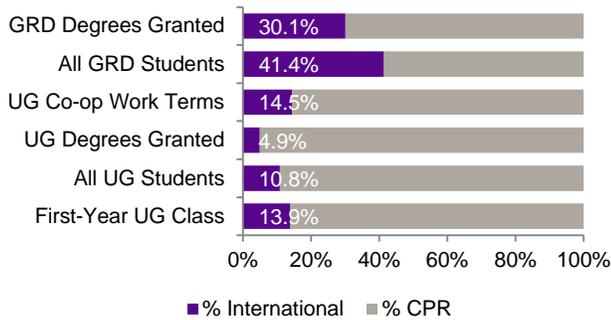
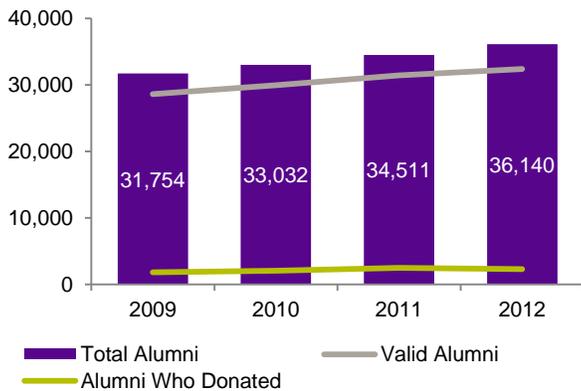


Figure 115: Industry Funding by Source (\$millions), 2010/11-2012/13



G. Advancement

Figure 116: Alumni, 2009-2012



As of December 31, 2012 Waterloo Engineering had 36,140 alumni, of whom 90% were considered “valid” (for whom the Office of Alumni Affairs had at least one method of contact). Of those, 7.2% made a donation to the University of Waterloo in 2012. As shown in Figure 116, the proportion of alumni for whom we have a method of contact and the proportion choosing to make a donation to Waterloo are both relatively unchanged over the past four years.

Figure 117 details total funds raised for Waterloo Engineering in the past three years. As of May 1, 2013 we had reached 80% of our current campaign goal; as shown in Figure 118, progress varies by priority area.

Figure 117: Funds Raised (\$millions), 2010/11-2012/13

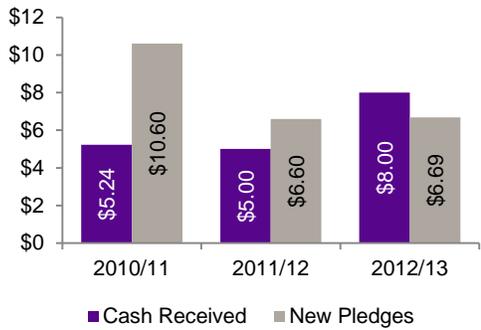
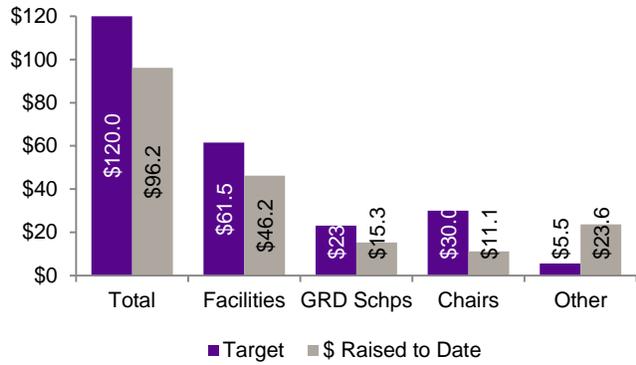
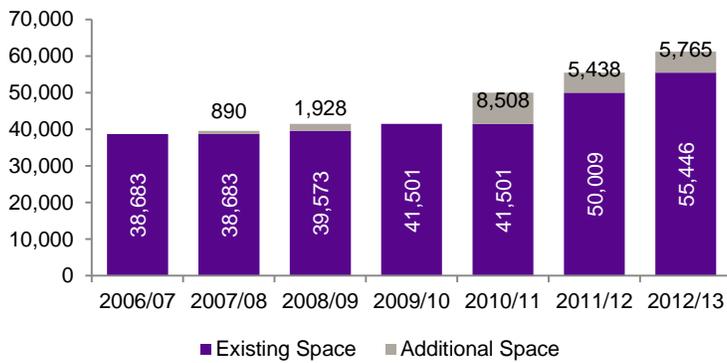


Figure 118: Campaign Progress (\$millions) to May 1, 2013



H. Space

Figure 119: Space Holdings (nasm), 2006/07-2012/13



Waterloo Engineering space holdings have increased by 22,528 nasm (just over 58%) over the past seven years, to reach 61,211 nasm. While this is a significant achievement, space limitations remain the most pressing constraint to the achievement of many of our plan goals.

V. Appendices

The data tables appended here contain the data provided to all Waterloo Engineering units in order to assist in their planning and annual plan review and progress update. Appendix H provides the definitions and sources used to create these data.

A. Faculty and Staff Data Tables

1. Total Regular Faculty, 2009/10

Department	Prof	Assoc	Asst	Lect	Total	#	%
		Prof	Prof			Female	Female
Architecture	1.0	11.0	3.0	1.0	16.0	6.0	37.5%
Conrad	1.0	0.0	0.0	2.0	3.0	0.0	0.0%
Chemical	18.0	7.0	6.0	0.0	31.0	2.0	6.5%
Civil & Environmental	18.3	6.5	8.5	2.0	35.3	3.0	8.5%
Electrical & Computer	29.0	26.0	18.0	4.5	77.5	8.0	10.3%
Management Sciences	7.3	6.0	6.0	1.0	20.3	5.0	24.7%
Mechanical & Mechatronics	26.0	7.0	17.0	1.0	51.0	9.0	17.6%
Systems Design	9.0	10.3	4.0	2.0	25.3	4.0	15.8%
Support Unit Offices	0.0	0.0	0.0	1.0	1.0	0.0	0.0%
TOTAL	109.5	73.8	62.5	14.5	260.3	37.0	14.2%

Total Regular Faculty, 2010/11

Department	Prof	Assoc	Asst	Lect	Total	#	%
		Prof	Prof			Female	Female
Architecture	1.0	11.0	3.0	1.0	16.0	6.0	37.5%
Conrad	2.0	0.0	0.0	1.0	3.0	0.0	0.0%
Chemical	21.0	6.0	6.0	2.0	35.0	2.0	5.7%
Civil & Environmental	20.3	6.0	8.0	2.0	36.3	3.0	8.3%
Electrical & Computer	31.0	26.0	20.0	4.5	81.5	9.0	11.0%
Management Sciences	7.3	4.0	9.0	2.0	22.3	5.0	22.5%
Mechanical & Mechatronics	25.0	11.0	15.0	1.5	52.5	9.0	17.1%
Systems Design	10.0	6.3	5.0	2.0	23.3	4.0	17.2%
Support Unit Offices	0.0	0.0	0.0	1.5	1.5	0.0	0.0%
TOTAL	117.5	70.3	66.0	17.5	271.3	38.0	14.0%

Total Regular Faculty, 2011/12

Department	Prof	Assoc	Asst	Lect	Total	#	%
		Prof	Prof			Female	Female
Architecture	2.0	11.0	3.0	2.0	18.0	7.0	38.9%
Conrad	2.0	1.0	0.0	1.0	4.0	0.0	0.0%
Chemical	21.0	6.0	7.0	4.0	38.0	3.0	7.9%
Civil & Environmental	20.3	6.0	10.0	2.0	38.2	4.0	10.5%
Electrical & Computer	33.0	26.0	18.0	4.5	81.5	9.0	11.0%
Management Sciences	8.3	4.0	12.0	2.0	26.3	6.0	22.9%
Mechanical & Mechatronics	26.0	13.0	13.0	1.5	53.5	9.0	16.8%
Systems Design	10.0	7.3	5.0	2.0	24.3	4.0	16.4%
Support Unit Offices	0.0	0.0	0.0	2.5	2.5	1.0	39.8%
TOTAL	122.5	74.3	68.0	21.5	286.3	43.0	15.0%

Total Regular Faculty, 2012/13

Department	Prof	Assoc Prof	Asst Prof	Lect	Total	# Female	% Female
Architecture	2.0	12.0	3.0	2.0	19.0	7.0	36.8%
Conrad	1.0	3.0	0.0	1.0	5.0	1.0	20.0%
Chemical	23.0	3.0	7.0	3.0	36.0	3.0	8.3%
Civil & Environmental	20.3	10.0	6.5	2.0	38.8	4.5	11.6%
Electrical & Computer	35.0	26.0	21.0	4.5	86.5	9.0	10.4%
Management Sciences	8.3	4.0	11.0	4.0	27.3	6.0	22.0%
Mechanical & Mechatronics	25.5	16.0	10.0	1.5	53.0	8.5	16.0%
Systems Design	10.3	7.0	5.0	2.0	24.3	4.0	16.4%
Support Unit Offices	0.0	0.0	0.0	2.5	2.5	1.0	39.8%
TOTAL	125.3	81.0	63.5	22.5	292.3	44.0	15.1%

2. Distribution of Regular Faculty by PEng Status, 2010/11

Department	Registered	Applied	Not Applied	Not Eligible	Total
Chemical	20.0	7.0	8.0	0.0	35.0
Civil & Environmental	27.8	1.0	7.5	0.0	36.3
Electrical & Computer	45.5	12.0	24.0	0.0	81.5
Management Sciences	2.3	11.0	4.0	5.0	22.3
Mechanical & Mechatronics	38.5	9.0	5.0	0.0	52.5
Systems Design	12.3	2.0	7.0	0.0	21.3
Other	1.5	0.0	0.0	0.0	1.5
TOTAL	147.8	42.0	55.5	5.0	250.3

Distribution of Regular Faculty by PEng Status, 2011/12

Department	Registered	Applied	Not Applied	Not Eligible	Total
Chemical	20.0	8.0	10.0	0.0	38.0
Civil & Environmental	27.8	1.0	9.5	0.0	38.2
Electrical & Computer	48.5	9.0	24.0	0.0	81.5
Management Sciences	9.3	6.0	6.0	5.0	26.3
Mechanical & Mechatronics	41.5	8.0	4.0	0.0	53.5
Systems Design	12.3	2.0	7.0	1.0	22.3
Other	1.5	1.0	0.0	0.0	2.5
TOTAL	160.8	35.0	60.5	6.0	262.3

Distribution of Regular Faculty by PEng Status, 2012/13

Department	Registered	Applied	Not Applied	Not Eligible	Total
Chemical	20.0	7.0	9.0	0.0	36.0
Civil & Environmental	29.8	3.0	6.0	0.0	38.8
Electrical & Computer	49.5	11.0	26.0	0.0	86.5
Management Sciences	12.3	6.0	4.0	5.0	27.3
Mechanical & Mechatronics	43.0	5.0	5.0	0.0	53.0
Systems Design	14.3	2.0	10.0	1.0	27.3
Other	1.5	1.0	0.0	0.0	2.5
TOTAL	170.4	35.0	60.0	6.0	271.4

3. Distribution of Regular Faculty by Age, 2010/11-2012/13

Age Range	2010/11	2011/12	2012/13
<30	6.0	5.0	3.0
30-34	21.0	21.0	23.0
35-39	45.3	48.0	44.5
40-44	42.0	43.3	45.3
45-49	43.0	46.0	39.0
50-54	57.0	48.0	58.0
55-59	26.0	37.5	38.5
60-64	19.0	23.5	24.5
65+	12.0	14.0	16.5
TOTAL	271.3	286.3	292.3

4. Total Tenured and Tenure-Stream Faculty, 2009/10

Department	Faculty			Total	# Female	% Female
	Prof	Assoc Prof	Asst Prof			
Architecture	2.0	11.0	3.0	15.0	6.0	40.0%
Conrad	2.0	1.0	0.0	1.0	0.0	0.0%
Chemical	21.0	6.0	7.0	31.0	2.0	6.5%
Civil & Environmental	20.3	6.0	10.0	33.3	3.0	9.0%
Electrical & Computer	33.0	26.0	18.0	73.0	8.0	11.0%
Management Sciences	8.3	4.0	12.0	19.3	5.0	26.0%
Mechanical & Mechatronics	26.0	13.0	13.0	50.0	9.0	18.0%
Systems Design	10.0	7.3	5.0	23.3	4.0	17.2%
TOTAL	0.0	0.0	0.0	245.8	37.0	15.1%

Total Tenured and Tenure-Stream Faculty, 2010/11

Department	Faculty			Total	# Female	% Female
	Prof	Assoc Prof	Asst Prof			
Architecture	1.0	11.0	3.0	15.0	6.0	40.0%
Conrad	2.0	0.0	0.0	2.0	0.0	0.0%
Chemical	21.0	6.0	6.0	33.0	2.0	6.1%
Civil & Environmental	20.3	6.0	8.0	34.3	3.0	8.8%
Electrical & Computer	31.0	26.0	20.0	77.0	9.0	11.7%
Management Sciences	7.3	4.0	9.0	20.3	4.0	19.8%
Mechanical & Mechatronics	25.0	11.0	15.0	51.0	9.0	17.6%
Systems Design	10.0	6.3	5.0	21.3	4.0	18.8%
TOTAL	117.5	70.3	66.0	253.8	37.0	14.6%

Total Tenured and Tenure-Stream Faculty, 2011/12

Department	Faculty			Total	# Female	% Female
	Prof	Assoc Prof	Asst Prof			
Architecture	1.0	11.0	3.0	16.0	7.0	43.8%
Conrad	2.0	0.0	0.0	3.0	0.0	0.0%
Chemical	21.0	6.0	6.0	34.0	2.0	5.9%
Civil & Environmental	20.3	6.0	8.0	36.2	4.0	11.0%
Electrical & Computer	31.0	26.0	20.0	77.0	9.0	11.7%
Management Sciences	7.3	4.0	9.0	24.3	5.0	20.6%
Mechanical & Mechatronics	25.0	11.0	15.0	52.0	9.0	17.3%
Systems Design	10.0	6.3	5.0	22.3	4.0	17.9%
TOTAL	122.5	74.3	68.0	264.8	40.0	15.1%

Total Tenured and Tenure-Stream Faculty, 2012/13

Department	Prof	Assoc Prof	Asst Prof	Total	# Female	% Female
Architecture	2.0	12.0	3.0	17.0	7.0	41.2%
Conrad	1.0	3.0	0.0	4.0	1.0	25.0%
Chemical	23.0	3.0	7.0	33.0	2.0	6.1%
Civil & Environmental	20.3	10.0	6.5	36.8	4.5	12.3%
Electrical & Computer	35.0	26.0	21.0	82.0	9.0	11.0%
Management Sciences	8.3	4.0	11.0	23.3	4.0	17.2%
Mechanical & Mechatronics	25.5	16.0	10.0	51.5	8.5	16.5%
Systems Design	10.3	7.0	5.0	22.3	4.0	17.9%
TOTAL	125.3	81.0	63.5	269.8	40.0	14.8%

5. Distribution of TTS Faculty by PhD School, 2010/11-2012/13

PhD School	2010/11	2011/12	2012/13
Waterloo	68.0	64.0	64.0
Ontario	40.5	44.5	44.5
Canada	30.0	36.0	37.0
USA	60.0	70.8	74.33
International	37.0	39.0	38.5
TOTAL	235.5	254.3	258.3

6. Total Non-Regular Faculty Appointments, 2010/11

Department	Adj-uncts	Rsch Profs	Post Docs	Rsch Assocs	Visitors	Def-term Profs	Total
Architecture	17.0	0.0	0.0	0.0	0.0	0.0	17.0
Conrad	4.0	0.0	0.0	0.0	0.0	0.0	4.0
Chemical	28.0	1.0	23.0	11.0	40.0	1.5	104.5
Civil & Environmental	67.0	3.0	10.0	4.0	10.0	0.0	94.0
Electrical & Computer	30.0	2.0	36.0	21.0	28.0	0.0	117.0
Management Sciences	17.0	0.0	0.0	0.0	2.0	0.0	19.0
Mechanical & Mechatronics	43.0	1.0	30.0	7.0	15.0	0.0	96.0
Systems Design	34.0	1.0	12.0	1.0	1.0	1.0	50.0
Other	4.0	0.0	0.0	0.0	0.0	0.0	4.0
TOTAL	244.0	8.0	111.0	44.0	96.0	2.5	505.5

Total Non-Regular Faculty Appointments, 2011/12

Department	Adj-uncts	Rsch Profs	Post Docs	Rsch Assocs	Visitors	Def-term Profs	Total
Architecture	16.0	0.0	0.0	0.0	0.0	0.0	16.0
Conrad	5.0	0.0	1.0	0.0	0.0	1.0	7.0
Chemical	21.0	1.0	27.0	16.0	45.0	0.0	110.0
Civil & Environmental	56.0	3.0	12.0	5.0	8.0	2.0	86.0
Electrical & Computer	44.0	1.0	34.0	23.0	33.0	0.0	135.0
Management Sciences	17.0	0.0	0.0	0.0	1.0	0.0	18.0
Mechanical & Mechatronics	45.0	1.0	23.0	6.0	11.0	0.0	86.0
Systems Design	33.0	0.0	10.0	1.0	6.0	0.0	50.0
Other	2.0	0.0	0.0	0.0	0.0	1.0	3.0
TOTAL	239.0	6.0	107.0	51.0	104.0	4.0	511.0

Total Non-Regular Faculty Appointments, 2012/13

Department	Adj- uncts	Rsch Profs	Post Docs	Rsch Assocs	Visitors	Def-term Profs	Total
Architecture	13.0	0.0	0.0	0.0	0.0	0.0	13.0
Conrad	6.0	0.0	0.0	0.0	0.0	0.0	6.0
Chemical	24.0	1.0	25.0	9.0	38.0	1.5	98.5
Civil & Environmental	40.0	3.0	12.0	7.0	3.0	0.0	65.0
Electrical & Computer	44.0	0.0	41.0	30.0	35.0	0.0	150.0
Management Sciences	19.0	0.0	1.0	0.0	4.0	0.0	24.0
Mechanical & Mechatronics	42.0	1.0	21.0	10.0	18.0	0.0	92.0
Systems Design	36.0	0.0	6.0	2.0	12.0	2.0	58.0
Other	1.0	0.0	0.0	0.0	0.0	0.0	1.0
TOTAL	225.0	5.0	106.0	58.0	110.0	3.5	507.5

7. Selected Major Faculty Awards and Honours, 2012

Department	Faculty Member	Award
Architecture	Sheppard, Lola vanPelt, Robert	Architecture Canada's 2012 Young Architect Award Senior Fellow, Massey College
Chemical Engineering	Chen, Zhongwei	Early Researcher Award
	Gu, Frank	Canada Research Chair: Tier 2
	Pritzker, Mark	Faculty of Engineering Teaching Excellence Award
	Rempel, Garry	Award of Excellence in Graduate Supervision, UW
	Rempel, Garry	Golden Jubilee Visiting Fellowship, Institute of Chemical Technology
Civil & Environmental Engineering	Soares, Joao	University Research Chair
	Zhao, Boxin	Early Researcher Award
	Haas, Carl	Canada Research Chair: Tier 1
	Huck, Peter	En-hui Yang Engineering Research Innovation Award
	Schuster, Reinhold	CAM-AM Civil Engineering Amity Award 2012
Electrical & Computer Engineering	Applevich, Dwight	Engineers Canada Fellow
	Ban, Dayan	Faculty of Engineering Research Excellence Award
	Canizares, Claudio	Royal Society of Canada Fellow
	Jayaram, Shesha	University Research Chair
	Karim, Karim	Grand Challenges Canada Rising Starts in Global Health Award
	Khandani, Amir	Canada Research Chair: Tier 1
	Ramahi, Omar	IEEE EMC Society's Technical Achievement Award (2012)
	Sachdev, Manoj	IEEE Fellow
Management Sciences	Saini, Simarjeet	Waterloo Region Record's Top 40 Under 40
	Shen, Xuemin	Canadian Academy of Engineering Fellow
	Zhuang, Weihua	Engineering Institute of Canada Fellow
	Smucker, Mark D	Faculty of Engineering Teaching Excellence Award
	Mechanical & Mechatronics Engineering	Bedi, Sanjeev
Ren, Liqing		Canadian Society for Mechanical Engineering Fellow
Stublely, Gordon		Ontario Undergraduate Student Alliance Award for Excellence in Teaching
Tan, Zhongchao		Chair Professorship from Dalian Maritime University, School of Environment
Weckman, David		American Welding Society's 2012 Robert L. Peaslee Memorial Award
Systems Design Engineering	Zhou, Norman	American Welding Society's 2012 Robert L. Peaslee Memorial Award
	Clausi, David	Faculty of Engineering Research Excellence Award
	Gorbet, Maud	Women of Waterloo (WOW) Award
	Hipel, Keith	2012 Japan Society for the Promotion of Science (JSPS) Eminent Scientist
	Wong, Alexander	Early Researcher Award
	Wong, Alexander	Faculty of Engineering Research Excellence Award

8. FTE Staff, 2009/10

Department	Tech	Admin	Total	#	%
				Female	Female
Architecture	4.0	6.0	10.0	6.0	60.0%
Conrad	0.0	3.0	3.0	3.0	100.0%
Chemical	10.0	5.0	15.0	7.0	46.7%
Civil & Environmental	9.0	7.0	16.0	8.0	50.0%
Electrical & Computer	26.0	15.6	41.6	21.6	51.9%
Management Sciences	1.0	6.0	7.0	6.0	85.7%
Mechanical & Mechatronics	17.0	12.0	29.0	12.0	41.4%
Systems Design	4.0	5.0	9.0	5.0	55.6%
Dean's Office-administration	0.0	13.8	13.8	11.8	85.5%
Dean's Office-advancement	0.0	11.8	11.8	8.8	74.6%
Dean's Office-research institutes	0.0	6.0	6.0	4.0	66.7%
Undergraduate Office	2.0	8.5	10.5	9.5	90.5%
Undergraduate Office-PDEng	0.0	8.0	8.0	5.0	62.5%
Engineering Computing	9.0	1.0	10.0	2.0	20.0%
Engineering Machine Shop	9.0	2.5	11.5	0.5	3.9%
TOTAL	91.0	111.1	202.1	110.1	54.5%

FTE Staff, 2010/11

Department	Tech	Admin	Total	#	%
				Female	Female
Architecture	5.0	6.0	11.0	6.0	54.5%
Conrad	0.0	4.0	4.0	4.0	100.0%
Chemical	9.5	5.0	14.5	7.0	48.3%
Civil & Environmental	9.0	7.0	16.0	8.0	50.0%
Electrical & Computer	27.0	16.0	43.0	22.0	51.2%
Management Sciences	1.0	6.0	7.0	6.0	85.7%
Mechanical & Mechatronics	16.0	10.0	26.0	10.0	38.5%
Systems Design	4.0	5.0	9.0	5.0	55.6%
Dean's Office-administration	0.0	8.0	8.0	8.0	100.0%
Dean's Office-advancement	0.0	9.8	9.8	7.8	79.6%
Engineering Computing	10.0	1.0	11.0	2.0	18.2%
Engineering Machine Shop	9.0	2.5	11.5	0.5	3.9%
Graduate Office	0.0	2.0	2.0	2.0	100.0%
Outreach Office	0.0	1.0	1.0	0.0	0.0%
Research Office	0.0	2.0	2.0	1.0	50.0%
Research Institutes	0.0	6.0	6.0	4.0	66.7%
Undergraduate Office	2.0	9.5	11.5	9.5	82.6%
WatPD-Engineering	0.0	1.0	1.0	1.0	100.0%
TOTAL	92.5	101.8	194.3	103.8	53.4%

FTE Staff, 2011/12

Department	Tech	Admin	Total	#	%
				Female	Female
Architecture	5.0	5.0	10.0	6.0	60.0%
Conrad	0.0	3.0	3.0	3.0	100.0%
Chemical	9.5	6.0	15.5	8.0	51.6%
Civil & Environmental	9.0	6.0	15.0	7.0	46.7%
Electrical & Computer	26.0	16.2	42.2	22.2	52.6%
Management Sciences	2.0	6.0	8.0	7.0	87.5%
Mechanical & Mechatronics	17.0	12.0	29.0	12.0	41.4%
Systems Design	4.0	4.0	8.0	4.0	50.0%
Dean's Office-administration	0.0	10.0	10.0	9.0	90.0%
Dean's Office-advancement	0.0	14.8	14.8	11.8	79.7%
Engineering Computing	9.8	1.0	10.8	1.8	16.7%
Engineering Machine Shop	9.0	1.0	10.0	0.0	0.0%
Graduate Office	0.0	2.0	2.0	2.0	100.0%
Outreach Office	0.0	2.0	2.0	1.0	50.0%
Research Office	0.0	2.0	2.0	1.0	50.0%
Research Institutes	0.0	6.0	6.0	4.0	66.7%
Undergraduate Office	0.0	13.5	13.5	11.5	85.2%
TOTAL	91.3	110.5	201.8	111.3	55.2%

FTE Staff, 2012/13

Department	Tech	Admin	Total	#	%
				Female	Female
Architecture	4.0	5.0	9.0	5.0	55.6%
Conrad	0.0	3.0	3.0	3.0	100.0%
Chemical	11.5	6.0	17.5	9.0	51.4%
Civil & Environmental	9.0	6.0	15.0	7.0	46.7%
Electrical & Computer	26.0	20.2	46.2	26.2	56.7%
Management Sciences	2.0	7.0	9.0	7.0	77.8%
Mechanical & Mechatronics	17.0	12.0	29.0	12.0	41.4%
Systems Design	4.0	5.0	9.0	5.0	55.6%
Dean's Office-administration	0.0	11.0	11.0	9.0	81.8%
Dean's Office-advancement	0.0	14.8	14.8	12.8	86.5%
Engineering Computing	9.8	1.0	10.8	1.8	16.7%
Engineering Machine Shop	11.0	2.0	13.0	1.0	7.7%
Graduate Office	0.0	2.0	2.0	2.0	100.0%
Outreach Office	0.0	2.0	2.0	1.0	50.0%
Research Office	0.0	3.0	3.0	2.0	66.7%
Research Institutes	0.0	7.0	7.0	5.0	71.4%
Undergraduate Office	0.0	13.5	13.5	11.5	85.2%
TOTAL	94.3	120.5	214.8	120.3	56.0%

9. Distribution of FTE Staff by Age, 2010/11-2012/13

Age Range	2010/11	2011/12	2012/13
<30	11.0	10.0	11.0
30-34	18.0	21.0	21.0
35-39	22.0	23.0	27.0
40-44	26.0	21.5	22.5
45-49	42.5	43.5	46.5
50-54	34.8	37.3	42.5
55-59	23.0	30.5	28.3
60+	17.0	15.0	16.0
TOTAL	194.3	201.8	214.8

10. Staff Awards, 2012

Department	Staff Member	Award
Systems Design Engineering	Lawrence, Vicky	Dean of Engineering Outstanding Staff Performance Award
Undergraduate Office	Lowe, June	Dean of Engineering Outstanding Staff Performance Award
Outreach Office	Dyck, Caity	Women of Waterloo Award

11. Faculty:Staff Ratios, 2009/10

Department	Faculty to Admin Staff	Faculty to Tech Staff	Faculty to Total Staff
Architecture	2.64	4.00	1.60
Conrad	1.00	n/a	1.00
Chemical	6.20	3.10	2.07
Civil & Environmental	5.04	3.92	2.20
Electrical & Computer	4.97	2.98	1.86
Management Sciences	3.38	20.25	2.89
Mechanical & Mechatronics	4.25	3.00	1.76
Systems Design	5.06	6.33	2.81
FACULTY TOTAL	2.34	2.86	1.29
Academic Units Only	4.35	3.65	1.99

Faculty:Staff Ratios, 2010/11

Department	Faculty to Admin Staff	Faculty to Tech Staff	Faculty to Total Staff
Architecture	2.67	3.20	1.45
Conrad	0.75	n/a	0.75
Chemical	7.00	3.68	2.41
Civil & Environmental	5.18	4.03	2.27
Electrical & Computer	5.09	3.02	1.90
Management Sciences	3.71	22.25	3.18
Mechanical & Mechatronics	5.25	3.28	2.02
Systems Design	4.66	5.83	2.59
FACULTY TOTAL	2.66	2.93	1.40
Academic Units Only	4.57	3.77	2.07

Faculty: Staff Ratios, 2011/12

Department	Faculty to Admin Staff	Faculty to Tech Staff	Faculty to Total Staff
Architecture	3.60	3.60	1.80
Conrad	1.33	n/a	1.33
Chemical	6.33	4.00	2.45
Civil & Environmental	6.37	4.25	2.55
Electrical & Computer	5.03	3.13	1.93
Management Sciences	4.38	13.13	3.28
Mechanical & Mechatronics	4.46	3.15	1.84
Systems Design	6.08	6.08	3.04
FACULTY TOTAL	2.59	3.14	1.42
Academic Units Only	4.88	3.91	2.17

Faculty:Staff Ratios, 2012/13

Department	Faculty to Admin Staff	Faculty to Tech Staff	Faculty to Total Staff
Architecture	3.80	4.75	2.11
Conrad	1.67	n/a	1.67
Chemical	6.00	3.13	2.06
Civil & Environmental	6.46	4.31	2.58
Electrical & Computer	4.29	3.33	1.87
Management Sciences	3.89	13.63	3.03
Mechanical & Mechatronics	4.42	3.12	1.83
Systems Design	4.87	6.08	2.70
FACULTY TOTAL	2.43	3.10	1.36
Academic Units Only	4.52	3.94	2.11

B. Undergraduate Studies Data Tables

1. Total Undergraduate Enrolment (head count), Fall 2009

Program	Total	#Female	% Female	#Visa	% Visa
Architecture	346	189	54.6%	9	2.6%
Chemical	591	203	34.3%	49	8.3%
UAE: Chemical	8	1	12.5%	7	87.5%
Civil	490	114	23.3%	29	5.9%
UAE: Civil	14	0	0.0%	14	100.0%
Computer	571	53	9.3%	41	7.2%
Electrical	901	85	9.4%	66	7.3%
Environmental	185	93	50.3%	10	5.4%
Geological	73	18	24.7%	2	2.7%
Management	158	49	31.0%	16	10.1%
Mechanical	832	64	7.7%	43	5.2%
Mechatronics	522	34	6.5%	42	8.0%
Nanotechnology	439	87	19.8%	17	3.9%
Software	442	38	8.6%	23	5.2%
Systems Design	370	95	25.7%	7	1.9%
TOTAL	5942	1123	18.9%	375	6.3%

Total Undergraduate Enrolment (head count), Fall 2010

Program	Total	#Female	% Female	#Visa	% Visa
Architecture	368	200	54.3%	8	2.2%
Chemical	588	206	35.0%	59	10.0%
UAE: Chemical	30	6	20.0%	28	93.3%
Civil	506	109	21.5%	31	6.1%
UAE: Civil	22	3	13.6%	19	86.4%
Computer	611	58	9.5%	43	7.0%
Electrical	946	89	9.4%	69	7.3%
Environmental	223	104	46.6%	13	5.8%
Geological	81	26	32.1%	1	1.2%
Management	211	61	28.9%	23	10.9%
Mechanical	845	61	7.2%	55	6.5%
Mechatronics	538	44	8.2%	41	7.6%
Nanotechnology	494	93	18.8%	32	6.5%
Software	491	45	9.2%	30	6.1%
Systems Design	392	92	23.5%	10	2.6%
TOTAL	6346	1197	18.9%	462	7.3%

Total Undergraduate Enrolment (head count), Fall 2011

Program	Total	#Female	% Female	#Visa	% Visa
Architecture	352	204	58.0%	7	2.0%
Chemical	594	198	33.3%	69	11.6%
UAE: Chemical	56	17	30.4%	49	87.5%
Civil	527	125	23.7%	41	7.8%
UAE: Civil	46	9	19.6%	35	76.1%
Computer	625	53	8.5%	48	7.7%
Electrical	921	91	9.9%	84	9.1%
Environmental	245	116	47.3%	15	6.1%
Geological	88	22	25.0%	2	2.3%
Management	257	83	32.3%	34	13.2%
Mechanical	878	80	9.1%	74	8.4%
Mechatronics	562	52	9.3%	54	9.6%
Nanotechnology	488	97	19.9%	36	7.4%
Software	503	52	10.3%	35	7.0%
Systems Design	412	101	24.5%	11	2.7%
TOTAL	6554	1300	19.8%	594	9.1%

Total Undergraduate Enrolment (head count), Fall 2012

Program	Total	#Female	% Female	#Visa	% Visa
Architecture	370	209	56.5%	5	1.4%
Chemical	616	202	32.8%	81	13.1%
UAE: Chemical	62	16	25.8%	50	80.6%
Civil	554	134	24.2%	60	10.8%
UAE: Civil	57	8	14.0%	45	78.9%
Computer	682	59	8.7%	68	10.0%
Electrical	914	97	10.6%	103	11.3%
Environmental	249	124	49.8%	16	6.4%
Geological	102	26	25.5%	2	2.0%
Management	280	94	33.6%	33	11.8%
Mechanical	911	93	10.2%	94	10.3%
Mechatronics	610	66	10.8%	62	10.2%
Nanotechnology	504	100	19.8%	36	7.1%
Software	517	61	11.8%	38	7.4%
Systems Design	412	117	28.4%	10	2.4%
TOTAL	6840	1406	20.6%	703	10.3%

2. FTE Undergraduate Enrolment, 2009/10

Program	Total	# Female	% Female	#Visa	% Visa
Architecture	276.0	153.3	55.5%	6.5	2.4%
Chemical	472.8	161.8	34.2%	35.8	7.6%
UAE: Chemical	8.0	1.0	12.5%	7.0	87.5%
Civil	383.3	91.9	24.0%	22.0	5.7%
UAE: Civil	13.5	0.0	0.0%	13.5	100.0%
Computer	447.9	43.8	9.8%	29.0	6.5%
Electrical	718.1	69.4	9.7%	48.6	6.8%
Environmental	140.7	71.4	50.7%	6.5	4.6%
Geological	61.9	15.4	24.9%	1.0	1.6%
Management	130.3	37.0	28.4%	13.0	10.0%
Mechanical	678.2	52.9	7.8%	33.1	4.9%
Mechatronics	410.1	29.8	7.3%	30.5	7.4%
Nanotechnology	351.6	69.9	19.9%	13.0	3.7%
Software	351.8	30.8	8.8%	17.5	5.0%
Systems Design	296.5	74.1	25.0%	5.5	1.9%
TOTAL	4740.7	902.5	19.0%	282.5	6.0%

FTE Undergraduate Enrolment, 2010/11

Program	Total	# Female	% Female	#Visa	% Visa
Architecture	290.4	160	55.1%	6.5	2.2%
Chemical	471.9	164.8	34.9%	48.2	10.2%
UAE: Chemical	25.0	5.0	20.0%	23.0	92.0%
Civil	410.0	85.4	20.8%	26.1	6.4%
UAE: Civil	19.0	3.0	15.8%	16.0	84.2%
Computer	490.7	46.2	9.4%	31.0	6.3%
Electrical	725.9	71.3	9.8%	52.8	7.3%
Environmental	166.4	79.3	47.7%	9.5	5.7%
Geological	61.6	20.3	33.0%	1.0	1.6%
Management	167.0	50.6	30.3%	18.6	11.1%
Mechanical	668.5	48.5	7.3%	44.3	6.6%
Mechatronics	419.9	30.6	7.3%	31.7	7.5%
Nanotechnology	401.6	75.5	18.8%	26.2	6.5%
Software	392.7	36.8	9.4%	23.6	6.0%
Systems Design	315.9	74.5	23.6%	7.8	2.5%
TOTAL	5026.5	951.8	18.9%	366.3	7.3%

FTE Undergraduate Enrolment, 2011/12

Program	Total	# Female	% Female	#Visa	% Visa
Architecture	286.2	163.2	57.0%	5.5	1.9%
Chemical	471.3	158.4	33.6%	51.2	10.9%
UAE: Chemical	47.6	15.0	31.5%	42.1	88.4%
Civil	418.4	102.2	24.4%	31.3	7.5%
UAE: Civil	37.5	7.0	18.7%	29.0	77.3%
Computer	500.8	46.4	9.3%	40.6	8.1%
Electrical	743.6	70.1	9.4%	61.9	8.3%
Environmental	189.1	89.3	47.2%	11.8	6.2%
Geological	71.8	18.7	26.0%	1.0	1.4%
Management	203.4	63.6	31.3%	28.0	13.8%
Mechanical	709.5	64.4	9.1%	56.0	7.9%
Mechatronics	443.4	38.6	8.7%	36.5	8.2%
Nanotechnology	384.9	77.9	20.2%	25.6	6.7%
Software	400.2	43.9	11.0%	28.6	7.1%
Systems Design	320.8	75.5	23.5%	8.1	2.5%
TOTAL	5228.5	1034.2	19.8%	457.2	8.7%

FTE Undergraduate Enrolment, 2012/13

Program	Total	# Female	% Female	#Visa	% Visa
Architecture	290.2	165.1	56.9%	5.1	1.8%
Chemical	497.9	165.3	33.2%	67.2	13.5%
UAE: Chemical	45.5	12.0	26.4%	35.5	78.0%
Civil	445.1	110.0	24.7%	50.2	11.3%
UAE: Civil	43.5	5.0	11.5%	33.5	77.0%
Computer	546.9	46.2	8.4%	49.9	9.1%
Electrical	711.9	77.6	10.9%	75.8	10.6%
Environmental	191.6	94.5	49.3%	11.5	6.0%
Geological	76.3	19.0	24.9%	1.5	2.0%
Management	223.2	74.6	33.4%	24.8	11.1%
Mechanical	719.3	72.1	10.0%	75.3	10.5%
Mechatronics	475.8	48.7	10.2%	44.8	9.4%
Nanotechnology	397.9	81.2	20.4%	28.2	7.1%
Software	426.9	52.1	12.2%	29.1	6.8%
Systems Design	327.1	94.2	28.8%	8.6	2.6%
TOTAL	5419.1	1117.6	20.6%	541.0	10.0%

3. Undergraduate Degrees Granted, 2009

Program	Total	#Female	% Female	#Visa	% Visa
Architecture	64	33	51.6%	0	0.0%
Chemical	84	30	35.7%	3	3.6%
Civil	84	18	21.4%	1	1.2%
Computer	144	10	6.9%	6	4.2%
Electrical	92	9	9.8%	2	2.2%
Environmental	20	7	35.0%	1	5.0%
Geological	13	2	15.4%	1	7.7%
Mechanical	134	17	12.7%	2	1.5%
Mechatronics	88	9	10.2%	5	5.7%
Software	52	3	5.8%	3	5.8%
Systems Design	74	17	23.0%	2	2.7%
TOTAL	849	155	18.3%	26	3.1%

Undergraduate Degrees Granted, 2010

Program	Total	#Female	% Female	#Visa	% Visa
Architecture	56	32	57.1%	3	0.0%
Chemical	116	34	29.3%	3	2.6%
Civil	76	20	26.3%	3	3.9%
Computer	95	4	4.2%	2	2.1%
Electrical	117	10	8.5%	5	4.3%
Environmental	23	12	52.2%	0	0.0%
Geological	10	0	0.0%	0	0.0%
Mechanical	149	15	10.1%	7	4.7%
Mechatronics	97	8	8.2%	6	6.2%
Nanotechnology	64	11	17.2%	0	0.0%
Software	62	8	12.9%	0	0.0%
Systems Design	53	12	22.6%	1	1.9%
TOTAL	918	166	18.1%	30	3.3%

Undergraduate Degrees Granted, 2011

Program	Total	#Female	% Female	#Visa	% Visa
Architecture	76	40	52.6%	1	0.0%
Chemical	106	42	39.6%	4	3.8%
Civil	92	21	22.8%	4	4.3%
Computer	101	14	13.9%	4	4.0%
Electrical	154	15	9.7%	10	6.5%
Environmental	28	15	53.6%	1	3.6%
Geological	12	5	41.7%	0	0.0%
Mechanical	153	9	5.9%	5	3.3%
Mechatronics	83	5	6.0%	4	4.8%
Nanotechnology	87	18	20.7%	1	1.1%
Software	70	4	5.7%	2	2.9%
Systems Design	64	14	21.9%	1	1.6%
TOTAL	1026	202	19.7%	37	3.6%

Undergraduate Degrees Granted, 2012

Program	Total	#Female	% Female	#Visa	% Visa
Architecture	56	33	58.9%	3	5.4%
Chemical	105	34	32.4%	11	10.5%
Civil	92	28	30.4%	0	0.0%
Computer	89	10	11.2%	3	3.4%
Electrical	156	11	7.1%	8	5.1%
Environmental	34	16	47.1%	2	5.9%
Geological	13	3	23.1%	0	0.0%
Management	38	7	18.4%	4	10.5%
Mechanical	158	11	7.0%	6	3.8%
Mechatronics	88	4	4.5%	4	4.5%
Nanotechnology	70	14	20.0%	4	5.7%
Software	80	8	10.0%	5	6.3%
Systems Design	67	10	14.9%	1	1.5%
TOTAL	1046	189	18.1%	51	4.9%

4. Undergraduate Year One New Admissions, Fall 2009

Program	New Admissions			Total 1A Enrol't			% of total target	% of int'l target
	CPR	Int'l	Total	# Women	% Women	Total		
Architecture	69	1	70	36	48.6%	74	97.2%	10.0%
Chemical	106	11	117	40	32.8%	122	90.0%	73.3%
UAE: Chemical	1	7	8	1	12.5%	8	n/a	n/a
Civil	101	9	110	22	19.6%	112	104.8%	90.0%
UAE: Civil	0	14	14	0	0.0%	14	n/a	n/a
Electrical & Computer	302	36	338	33	9.6%	345	102.4%	120.0%
Environmental	45	4	49	27	52.9%	51	102.1%	133.3%
Geological	16	1	17	5	29.4%	17	100.0%	50.0%
Management	63	8	71	23	31.9%	72	118.3%	160.0%
Mechanical	182	16	198	14	6.9%	204	101.5%	106.7%
Mechatronics	105	16	121	8	6.6%	122	110.0%	160.0%
Nanotechnology	93	4	97	22	22.2%	99	88.2%	40.0%
Software	105	8	113	7	6.1%	114	102.7%	80.0%
Systems Design	80	3	83	30	36.1%	83	92.2%	n/a
TOTAL	1268	138	1406	268	18.6%	1437	102.1%	115.0%

Undergraduate Year One New Admissions, Fall 2010

Program	New Admissions			Total 1A Enrol't			% of total target	% of int'l target
	CPR	Int'l	Total	# Women	% Women	Total		
Architecture	75	1	76	45	57.7%	78	105.6%	16.7%
Chemical	109	18	127	39	30.5%	128	97.7%	120.0%
UAE: Chemical	2	21	23	5	21.7%	23	92.0%	91.3%
Civil	90	12	102	18	17.5%	103	97.1%	120.0%
UAE: Civil	3	8	11	3	27.3%	11	44.0%	34.8%
Electrical & Computer	336	39	375	38	10.0%	380	111.9%	111.4%
Environmental	60	4	64	24	37.5%	64	110.3%	50.0%
Geological	19	0	19	8	36.4%	22	111.8%	0.0%
Management	63	10	73	20	27.0%	74	121.7%	100.0%
Mechanical	177	18	195	15	7.5%	200	97.5%	90.0%
Mechatronics	118	11	129	15	11.4%	132	112.2%	73.3%
Nanotechnology	128	15	143	22	15.3%	144	130.0%	150.0%
Software	118	10	128	16	12.3%	130	116.4%	100.0%
Systems Design	97	5	102	21	20.2%	104	113.3%	100.0%
TOTAL	1395	172	1567	289	18.1%	1593	107.9%	89.6%

Undergraduate Year One New Admissions, Fall 2011

Program	New Admissions			Total 1A Enrol't			% of total target	% of int'l target
	CPR	Int'l	Total	# Women	% Women	Total		
Architecture	72	2	74	45	60.0%	75	102.8%	33.3%
Chemical	120	18	138	47	33.8%	139	98.6%	90.0%
UAE: Chemical	5	28	33	12	35.3%	34	103.1%	93.3%
Civil	98	15	113	38	31.4%	121	98.3%	100.0%
UAE: Civil	8	22	30	7	23.3%	30	166.7%	146.7%
Electrical & Computer	297	44	341	28	8.0%	349	96.1%	110.0%
Environmental	60	5	65	31	46.3%	67	95.6%	62.5%
Geological	18	1	19	5	25.0%	20	111.8%	50.0%
Management	55	11	66	27	39.1%	69	110.0%	110.0%
Mechanical	184	30	214	24	10.7%	225	103.4%	136.4%
Mechatronics	112	21	133	19	14.6%	130	110.8%	140.0%
Nanotechnology	107	9	116	26	22.4%	116	105.5%	90.0%
Software	108	13	121	18	14.6%	123	100.8%	86.7%
Systems Design	86	3	89	23	24.2%	95	101.1%	100.0%
TOTAL	1330	222	1552	350	22.0%	1593	102.0%	105.2%

Undergraduate Year One New Admissions, Fall 2012

Program	New Admissions			Total 1A Enrol't			% of total target	% of int'l target
	CPR	Int'l	Total	# Women	% Women	Total		
Architecture	74	1	75	43	56.6%	76	98.7%	16.7%
Chemical	123	18	141	43	29.3%	147	100.7%	90.0%
UAE: Chemical	7	20	27	6	20.7%	29	67.5%	57.1%
Civil	92	14	106	41	36.0%	114	92.2%	93.3%
UAE: Civil	6	24	30	3	9.7%	31	75.0%	68.6%
Electrical & Computer	301	57	358	41	10.8%	380	99.4%	114.0%
Environmental	54	6	60	37	56.1%	66	85.7%	75.0%
Geological	32	0	32	10	28.6%	35	118.5%	0.0%
Management	58	4	62	24	34.3%	70	95.4%	40.0%
Mechanical	176	34	210	23	10.3%	224	100.0%	136.0%
Mechatronics	115	19	134	22	15.5%	142	103.1%	126.7%
Nanotechnology	108	8	116	31	25.6%	121	100.9%	80.0%
Software	118	11	129	21	15.4%	136	103.2%	73.3%
Systems Design	85	2	87	32	34.4%	93	96.7%	50.0%
TOTAL	1349	218	1567	377	22.7%	1664	97.8%	87.2%

5. Undergraduate Admissions by Entering Average Grade Range, 2009 – 2012

Department	2009	2010	2011	2012
90-94%	38.1%	37.6%	41.3%	43.7%
>=95%	16.4%	14.9%	16.0%	21.9%

6. Undergraduate Students:Faculty Ratio, 2009/10 – 2012/13

Department	2009/10	2010/11	2011/12	2012/13
Architecture	17.3	18.2	15.9	15.3
Chemical	19.3	18.0	17.0	18.8
Civil & Environmental	17.0	18.1	18.7	19.5
Electrical & Computer	19.9	20.0	20.4	19.7
Management Sciences	6.4	7.5	7.7	8.2
Mechanical & Mechatronics	18.1	17.5	18.2	19.0
Systems Design	17.0	18.8	18.4	18.9
TOTAL	17.6	17.7	17.6	17.8

7. Undergraduate Degrees Granted:Faculty Ratio, 2009/10 – 2012/13

Department	2009/10	2010/11	2011/12	2012/13
Architecture	4.0	3.5	4.2	2.9
Chemical	2.7	3.9	3.6	3.6
Civil & Environmental	3.3	3.0	3.5	3.6
Electrical & Computer	3.6	3.5	4.1	3.8
Management Sciences	n/a	n/a	n/a	1.4
Mechanical & Mechatronics	3.7	3.9	3.8	4.0
Systems Design	4.1	3.4	3.7	3.8
TOTAL	3.3	3.3	3.5	3.4

8. Co-op Employment Statistics, 2009

Discipline	Seeking Employment	Employed	Unemployed	% Employed	% Int'l Placements
Architecture	331	323	8	97.6%	21.4%
Chemical	697	661	36	94.8%	4.5%
Civil	531	518	13	97.6%	7.5%
Computer	653	643	10	98.5%	11.8%
Electrical	1016	972	44	95.7%	9.6%
Environmental	207	200	7	96.6%	7.5%
Geological	80	78	2	97.5%	0.0%
Management	131	125	6	95.4%	8.0%
Mechanical	927	856	71	92.3%	5.7%
Mechatronics	592	568	24	95.9%	8.6%
Nanotechnology	486	478	8	98.4%	11.1%
Systems Design	447	439	8	98.2%	20.5%
Software	491	479	12	97.6%	12.3%
TOTAL	6589	6340	249	96.2%	10.0%

Co-op Employment Statistics, 2010

Discipline	Seeking Employment	Employed	Unemployed	% Employed	% Int'l Placements
Architecture	396	362	34	91.4%	27.4%
Chemical	683	649	34	95.0%	7.0%
Civil	599	577	22	96.3%	6.1%
Computer	663	650	13	98.0%	13.4%
Electrical	1085	1040	45	95.9%	8.1%
Environmental	228	214	14	93.9%	10.7%
Geological	80	75	5	93.8%	1.4%
Management	189	171	18	90.5%	9.1%
Mechanical	950	901	49	94.8%	6.8%
Mechatronics	602	595	7	98.8%	11.9%
Nanotechnology	536	512	24	95.5%	16.6%
Systems Design	429	421	8	98.1%	25.3%
Software	540	530	10	98.1%	11.6%
TOTAL	6980	6697	283	96.0%	11.8%

Co-op Employment Statistics, 2011

Discipline	Seeking Employment	Employed	Unemployed	% Employed	% Int'l Placements
Architecture	367	350	17	95.4%	39.9%
Chemical	673	633	40	94.1%	6.0%
Civil	582	561	21	96.4%	3.0%
Computer	687	680	7	99.0%	13.4%
Electrical	1157	1110	47	95.9%	9.8%
Environmental	272	259	13	95.2%	5.1%
Geological	102	90	12	88.2%	1.1%
Management	281	271	10	96.4%	9.5%
Mechanical	971	945	26	97.3%	7.9%
Mechatronics	647	637	10	98.5%	10.2%
Nanotechnology	536	515	21	96.1%	15.6%
Systems Design	470	461	9	98.1%	30.4%
Software	554	550	4	99.3%	6.8%
TOTAL	7299	7062	237	96.8%	12.1%

Co-op Employment Statistics, 2012

Discipline	Seeking Employment	Employed	Unemployed	% Employed	% Int'l Placements
Architecture	399	385	14	96.5%	29.8%
Chemical	750	707	43	94.3%	4.6%
Civil	670	650	20	97.0%	5.8%
Computer	745	731	14	98.1%	82.2%
Electrical	1034	990	44	95.7%	13.0%
Environmental	287	274	13	95.5%	12.8%
Geological	97	84	13	86.6%	4.4%
Management	306	289	17	94.4%	1.2%
Mechanical	1032	993	39	96.2%	9.1%
Mechatronics	699	685	14	98.0%	6.6%
Nanotechnology	601	584	17	97.2%	13.0%
Systems Design	476	463	13	97.3%	23.9%
Software	590	585	5	99.2%	33.8%
TOTAL	7686	7420	266	96.5%	14.7%

9. Co-op Earnings, 2009/10-2012/13 (\$ millions)

	2009/10	2010/11	2011/12	2012/13
Faculty of Engineering	\$71.7 M	\$80.6 M	\$97.7 M	\$110.2 M

10. Undergraduate Exchange Summary, 2009-2012

	2009	2010	2011	2012
Incoming Students	180	204	215	205
Outgoing Students	74	89	92	91
TOTAL	254	293	307	296

C. Graduate Studies Data Tables

1. Total Graduate Enrolment (Head Count), Fall 2009

Department	PhD	Rsch Master	Prof Master	Non Deg	Total	# Female	% Female	# Visa	% Visa
Architecture	n/a	144	n/a	3	147	74	50.3%	7	4.8%
Conrad	n/a	n/a	62	56	118	37	31.4%	73	61.9%
Chemical	84	59	17	0	160	54	33.8%	68	42.5%
Civil & Environmental	89	85	60	3	237	55	23.2%	66	27.8%
Electrical & Computer	264	132	140	4	540	87	16.1%	197	36.5%
Management Sciences	31	33	153	2	219	68	31.1%	49	22.4%
Mechanical & Mechatronics	105	115	69	2	291	44	15.1%	62	21.3%
Systems Design	56	33	11	5	105	23	21.9%	34	32.4%
TOTAL	629	601	512	75	1817	442	24.3%	556	30.6%

Total Graduate Enrolment (Head Count), Fall 2010

Department	PhD	Rsch	Prof	Non	Total	#	%	#	%
		Master	Master	Deg		Female	Female	Visa	Visa
Architecture	n/a	119	n/a	3	122	61	50.0%	6	4.9%
Conrad	n/a	n/a	47	17	64	20	31.3%	33	51.6%
Chemical	90	52	13	0	155	50	32.3%	60	38.7%
Civil & Environmental	85	79	38	2	204	52	25.5%	59	28.9%
Electrical & Computer	296	140	191	2	629	99	15.7%	258	41.0%
Management Sciences	31	32	188	1	252	86	34.1%	94	37.3%
Mechanical & Mechatronics	119	108	73	2	302	50	16.6%	78	25.8%
Systems Design	59	40	12	5	116	23	19.8%	38	32.8%
TOTAL	680	570	562	32	1844	441	23.9%	626	33.9%

Total Graduate Enrolment (Head Count), Fall 2011

Department	PhD	Rsch	Prof	Non	Total	#	%	#	%
		Master	Master	Deg		Female	Female	Visa	Visa
Architecture	n/a	116	n/a	3	119	62	52.1%	8	6.7%
Conrad	n/a	n/a	33	0	33	9	27.3%	16	48.5%
Chemical	106	64	14	0	184	56	30.4%	90	48.9%
Civil & Environmental	108	85	41	0	234	58	24.8%	75	32.1%
Electrical & Computer	297	157	198	4	656	118	18.0%	302	46.0%
Management Sciences	33	31	131	1	196	63	32.1%	49	25.0%
Mechanical & Mechatronics	118	115	57	2	292	51	17.5%	90	30.8%
Systems Design	63	41	9	2	115	27	23.5%	52	45.2%
TOTAL	725	609	483	12	1829	444	24.3%	682	37.3%

Total Graduate Enrolment (Head Count), Fall 2012

Department	PhD	Rsch	Prof	Non	Total	#	%	#	%
		Master	Master	Deg		Female	Female	Visa	Visa
Architecture	n/a	115	0	6	121	62	51.2%	10	8.3%
Conrad	n/a	0	48	0	48	17	35.4%	21	43.8%
Chemical	113	55	29	5	202	60	29.7%	109	54.0%
Civil & Environmental	117	109	33	1	260	65	25.0%	100	38.5%
Electrical & Computer	288	178	198	5	669	122	18.2%	323	48.3%
Management Sciences	31	21	146	0	198	72	36.4%	72	36.4%
Mechanical & Mechatronics	128	142	49	1	320	45	14.1%	106	33.1%
Systems Design	67	40	17	3	127	26	20.5%	65	51.2%
TOTAL	744	660	520	21	1945	469	24.1%	806	41.4%

2. FTE Graduate Enrolment, 2009/10

Department	PhD	Rsch	Prof	Total	#	%	#	%
		Master	Master		Female	Female	Visa	Visa
Architecture	n/a	120.7	n/a	120.7	62.1	51.4%	3.1	2.6%
Conrad	n/a	n/a	50.7	50.7	14.9	29.3%	16.7	32.9%
Chemical	79.6	59.3	13.5	152.4	53.3	35.0%	65.7	43.1%
Civil & Environmental	80.3	74.7	46.2	201.2	45.3	22.5%	61.4	30.5%
Electrical & Computer	254.7	108.9	81.2	444.8	72.7	16.3%	187.3	42.1%
Management Sciences	26.3	30.7	76.4	133.4	47.2	35.4%	40.3	30.2%
Mechanical & Mechatronics	95.6	101.5	44.0	241.1	35.6	14.8%	58.0	24.1%
Systems Design	55.3	30.3	8.0	93.6	20.6	22.0%	28.0	29.9%
TOTAL	591.8	526.1	320.0	1438.1	351.7	24.5%	460.5	32.0%

FTE Graduate Enrolment, 2010/11

Department	PhD	Rsch	Prof	Total	#	%	#	%
		Master	Master		Female	Female	Visa	Visa
Architecture	n/a	106.8	n/a	106.8	52.1	48.8%	4.0	3.7%
Conrad	n/a	n/a	45.6	45.6	12.3	27.0%	16.7	36.6%
Chemical	92.4	49.3	12.1	153.9	51.4	33.4%	65.7	42.7%
Civil & Environmental	83.1	69.3	24.5	176.8	46.4	26.2%	58.7	33.2%
Electrical & Computer	280.1	116.2	111.2	507.6	84.3	16.6%	231.5	45.6%
Management Sciences	26.0	29.1	117.1	172.3	60.4	35.1%	80.2	46.5%
Mechanical & Mechatronics	107.1	95.4	42.8	245.3	42.9	17.5%	72.3	29.5%
Systems Design	59.3	32.1	10.1	101.4	20.0	19.7%	32.6	32.1%
TOTAL	648.0	498.2	363.4	1509.7	369.8	24.5%	561.7	37.2%

FTE Graduate Enrolment, 2011/12

Department	PhD	Rsch	Prof	Total	#	%	#	%
		Master	Master		Female	Female	Visa	Visa
Architecture	n/a	96.1	n/a	96.1	51.4	53.5%	3.6	3.7%
Conrad	n/a	n/a	34.8	34.8	10.5	30.2%	15.3	44.0%
Chemical	101.6	54.2	15.1	170.9	54.7	32.0%	85.0	49.7%
Civil & Environmental	98.6	76.2	22.4	197.2	52.7	26.7%	75.6	38.3%
Electrical & Computer	283.2	139.8	124.4	547.3	100.0	18.3%	289.4	52.9%
Management Sciences	25.4	27.0	73.6	126.0	42.6	33.8%	48.7	38.7%
Mechanical & Mechatronics	107.7	100.9	30.2	238.8	42.5	17.8%	83.9	35.1%
Systems Design	59.8	32.4	8.7	100.9	24.2	24.0%	46.3	45.9%
TOTAL	676.3	526.6	309.2	1512.0	378.6	25.0%	647.8	42.8%

FTE Graduate Enrolment, 2012/13

Department	PhD	Rsch	Prof	Total	#	%	#	%
		Master	Master		Female	Female	Visa	Visa
Architecture	n/a	94.7	n/a	94.7	50.0	52.8%	3.4	3.6%
Conrad	n/a	n/a	41.3	41.3	13.3	32.2%	18.7	45.3%
Chemical	109.0	48.7	26.4	184.1	58.1	31.6%	103.8	56.4%
Civil & Environmental	111.3	83.9	21.2	216.3	56.3	26.0%	94.6	43.7%
Electrical & Computer	279.8	156.8	124.1	560.7	105.1	18.7%	317.3	56.6%
Management Sciences	22.7	20.8	72.3	115.8	39.7	34.3%	56.2	48.5%
Mechanical & Mechatronics	116.5	123.9	31.8	272.2	41.6	15.3%	99.3	36.5%
Systems Design	64.1	33.1	14.9	112.1	23.9	21.3%	60.4	53.9%
TOTAL	703.4	561.9	332.0	1597.2	388.0	24.3%	753.7	47.2%

3. Graduate Degrees Granted, 2009

Department	PhD	Rsch	Prof	Total	#	%	#	%
		Master	Master		Female	Female	Visa	Visa
Architecture	n/a	32	n/a	32	23	71.9%	0	0.0%
Conrad	n/a	n/a	42	42	24	57.1%	16	38.1%
Chemical	13	28	0	41	13	31.7%	10	24.4%
Civil & Environmental	12	27	28	67	8	11.9%	7	10.4%
Electrical & Computer	36	46	39	121	19	15.7%	28	23.1%
Management Sciences	8	12	45	65	20	30.8%	17	26.2%
Mechanical & Mechatronics	17	29	14	60	10	16.7%	3	5.0%
Systems Design	10	9	1	20	6	30.0%	4	20.0%
TOTAL	96	183	169	448	123	27.5%	85	19.0%

Graduate Degrees Granted, 2010

Department	PhD	Rsch Master	Prof Master	Total	# Female	% Female	# Visa	% Visa
Architecture	n/a	49	n/a	49	24	49.0%	1	2.0%
Conrad	n/a	n/a	52	52	13	25.0%	17	32.7%
Chemical	12	25	10	47	15	31.9%	14	29.8%
Civil & Environmental	18	31	33	82	15	18.3%	11	13.4%
Electrical & Computer	37	61	49	147	28	19.0%	39	26.5%
Management Sciences	6	15	50	71	23	32.4%	17	23.9%
Mechanical & Mechatronics	10	46	43	99	11	11.1%	7	7.1%
Systems Design	11	11	4	26	4	15.4%	4	15.4%
TOTAL	94	238	241	573	133	23.2%	110	19.2%

Graduate Degrees Granted, 2011

Department	PhD	Rsch Master	Prof Master	Total	# Female	% Female	# Visa	% Visa
Architecture	n/a	44	n/a	44	27	61.4%	1	2.3%
Conrad	n/a	n/a	43	43	12	27.9%	16	37.2%
Chemical	20	25	7	52	14	26.9%	19	36.5%
Civil & Environmental	8	27	24	59	14	23.7%	10	16.9%
Electrical & Computer	50	44	82	176	29	16.5%	37	21.0%
Management Sciences	7	17	85	109	40	36.7%	45	41.3%
Mechanical & Mechatronics	20	44	36	100	11	11.0%	13	13.0%
Systems Design	11	10	8	29	5	17.2%	8	27.6%
TOTAL	116	211	285	612	152	24.8%	149	24.3%

Graduate Degrees Granted, 2012

Department	PhD	Rsch Master	Prof Master	Total	# Female	% Female	# Visa	% Visa
Architecture	n/a	39	n/a	39	20	51.3%	2	5.1%
Conrad	n/a	n/a	30	30	7	23.3%	13	43.3%
Chemical	17	26	5	48	20	41.7%	17	35.4%
Civil & Environmental	14	23	14	51	15	29.4%	8	15.7%
Electrical & Computer	53	55	104	212	39	18.4%	85	40.1%
Management Sciences	6	18	56	80	25	31.3%	25	31.3%
Mechanical & Mechatronics	14	29	32	75	14	18.7%	10	13.3%
Systems Design	11	19	4	34	14	41.2%	11	32.4%
TOTAL	115	209	245	569	154	27.1%	171	30.1%

4. FTE Graduate Student Intake, 2010

Department	Degree Type	Cdn/PR	Int'l	Total
Architecture	PhD	n/a	n/a	n/a
	Research Master	31.0	2.0	33.0
	Professional Master	n/a	n/a	n/a
	Total	31.0	2.0	33.0
Conrad	PhD	n/a	n/a	n/a
	Research Master	n/a	n/a	n/a
	Professional Master	22.0	18.0	40.0
	Total	22.0	18.0	40.0
Chemical	PhD	5.3	12.0	17.3
	Research Master	16.0	5.0	21.0
	Professional Master	7.0	1.0	8.0
	Total	28.3	18.0	46.3
Civil & Environmental	PhD	6.0	11.0	17.0
	Research Master	21.5	8.3	29.8
	Professional Master	10.9	0.0	10.9
	Total	38.4	19.3	57.7
Electrical & Computer	PhD	19.2	62.0	81.2
	Research Master	25.5	43.3	68.8
	Professional Master	48.5	33.6	82.1
	Total	93.2	138.9	232.1
Management Sciences	PhD	2.6	2.0	4.6
	Research Master	1.3	2.0	3.3
	Professional Master	28.2	19.3	47.5
	Total	32.1	23.3	55.4
Mechanical & Mechatronics	PhD	11.6	16.3	27.9
	Research Master	27.6	10.0	37.6
	Professional Master	31.2	1.0	32.2
	Total	70.4	27.3	97.7
Systems Design	PhD	8.3	7.0	15.3
	Research Master	6.3	6.3	12.6
	Professional Master	5.3	1.0	6.3
	Total	19.9	14.3	34.2
TOTAL	PhD	53.0	110.3	163.3
	Research Master	129.2	76.9	206.1
	Professional Master	153.1	73.9	227.0
	TOTAL	335.3	261.1	596.4

FTE Graduate Student Intake, 2011

Department	Degree Type	Cdn/PR	Int'l	Total
Architecture	PhD	n/a	n/a	n/a
	Research Master	39.0	1.0	40.0
	Professional Master	n/a	n/a	n/a
	Total	39.0	1.0	40.0
Conrad	PhD	n/a	n/a	n/a
	Research Master	n/a	n/a	n/a
	Professional Master	14.0	17.0	31.0
	Total	14.0	17.0	31.0
Chemical	PhD	6.3	23.0	29.3
	Research Master	19.3	12.0	31.3
	Professional Master	4.3	9.0	13.3
	Total	29.9	44.0	73.9
Civil & Environmental	PhD	5.3	18.0	23.3
	Research Master	27.2	11.0	38.2
	Professional Master	19.0	0.0	19.0
	Total	51.5	29.0	80.5
Electrical & Computer	PhD	19.6	37.0	56.6
	Research Master	24.2	35.3	59.5
	Professional Master	35.3	43.0	78.3
	Total	79.1	115.3	194.4
Management Sciences	PhD	1.9	5.0	6.9
	Research Master	4.6	0.0	4.6
	Professional Master	23.0	17.3	40.3
	Total	29.5	22.3	51.8
Mechanical & Mechatronics	PhD	7.3	18.0	25.3
	Research Master	35.5	14.0	49.5
	Professional Master	16.6	2.0	18.6
	Total	59.4	34.0	93.4
Systems Design	PhD	3.3	9.0	12.3
	Research Master	7.3	7.0	14.3
	Professional Master	1.3	6.0	7.3
	Total	11.9	22.0	33.9
TOTAL	PhD	43.7	110.0	153.7
	Research Master	157.1	80.3	237.4
	Professional Master	113.5	94.3	207.8
	TOTAL	314.3	284.6	598.9

FTE Graduate Student Intake, 2012

Department	Degree Type	Cdn/PR	Int'l	Total
Architecture	PhD	n/a	n/a	n/a
	Research Master	45.0	1.0	46.0
	Professional Master	n/a	n/a	n/a
	Course-Based Master	n/a	n/a	n/a
	Total	45.0	1.0	46.0
Conrad	PhD	n/a	n/a	n/a
	Research Master	n/a	n/a	n/a
	Professional Master	n/a	n/a	n/a
	Course-Based Master	25.0	16.0	41.0
	Total	25.0	16.0	41.0
Chemical	PhD	1.3	17.0	18.3
	Research Master	10.3	11.0	21.3
	Professional Master	10.6	14.0	24.6
	Course-Based Master	n/a	n/a	n/a
	Total	22.2	42.0	64.2
Civil & Environmental	PhD	4.3	21.0	25.3
	Research Master	24.1	7.3	31.4
	Professional Master	9.5	1.0	10.5
	Course-Based Master	n/a	n/a	n/a
	Total	37.9	29.3	67.2
Electrical & Computer	PhD	13.6	35.0	48.6
	Research Master	33.8	34.3	68.1
	Professional Master	25.2	49.2	74.4
	Course-Based Master	9.9	0.3	10.2
	Total	82.5	118.8	201.3
Management Sciences	PhD	1.9	4.0	5.9
	Research Master	1.0	6.0	7.0
	Professional Master	13.2	38.3	51.5
	Course-Based Master	8.4	0.0	8.4
	Total	24.5	48.3	72.8
Mechanical & Mechatronics	PhD	5.6	25.0	30.6
	Research Master	44.2	16.0	60.2
	Professional Master	17.6	2.0	19.6
	Course-Based Master	n/a	n/a	n/a
	Total	67.4	43.0	110.4
Systems Design	PhD	6.9	9.0	15.9
	Research Master	7.0	7.0	14.0
	Professional Master	4.0	12.0	16.0
	Course-Based Master	n/a	n/a	n/a
	Total	17.9	28.0	45.9
TOTAL	PhD	33.6	111.0	144.6
	Research Master	165.4	82.6	248.0
	Professional Master	80.1	116.5	196.6
	Course-Based Master	43.3	16.3	59.6
	TOTAL	322.4	326.4	648.8

5. Graduate Students:Faculty Ratio, 2009/10

Department	PhD	Rsch Master	Prof Master	Non Deg	All Students	Rsch Students
Architecture	n/a	8.0	n/a	0.4	8.5	8.0
Conrad	n/a	n/a	50.7	54.3	105.0	n/a
Chemical	2.6	1.9	0.4	0.0	4.9	4.5
Civil & Environmental	2.4	2.3	1.4	0.1	6.1	4.7
Electrical & Computer	3.5	1.5	1.1	0.0	6.1	5.0
Management Sciences	1.4	1.6	4.0	0.1	7.0	3.0
Mechanical & Mechatronics	1.9	2.0	0.9	0.0	4.9	3.9
Systems Design	2.4	1.3	0.3	0.1	4.1	3.7
TOTAL	2.4	2.1	1.3	0.3	6.1	4.5

Graduate Students:Faculty Ratio, 2010/11

Department	PhD	Rsch Master	Prof Master	Non Deg	All Students	Rsch Students
Architecture	n/a	7.1	n/a	0.5	7.6	7.1
Conrad	n/a	n/a	22.8	12.0	34.8	n/a
Chemical	2.8	1.5	0.4	0.0	4.7	4.3
Civil & Environmental	2.4	2.0	0.7	0.0	5.2	4.5
Electrical & Computer	3.6	1.5	1.4	0.0	6.6	5.1
Management Sciences	1.3	1.4	5.8	0.0	8.6	2.7
Mechanical & Mechatronics	2.1	1.9	0.8	0.0	4.8	4.0
Systems Design	2.8	1.5	0.5	0.1	4.9	4.3
TOTAL	2.6	2.0	1.4	0.2	6.1	4.5

Graduate Students:Faculty Ratio, 2011/12

Department	PhD	Rsch Master	Prof Master	Non Deg	All Students	Rsch Students
Architecture	n/a	6.0	n/a	0.3	6.3	6.0
Conrad	n/a	n/a	11.6	1.7	13.3	n/a
Chemical	3.0	1.6	0.4	0.0	5.1	4.6
Civil & Environmental	2.7	2.1	0.6	0.0	5.4	4.8
Electrical & Computer	3.7	1.8	1.6	0.0	7.1	5.5
Management Sciences	1.0	1.1	3.0	0.0	5.2	2.2
Mechanical & Mechatronics	2.1	1.9	0.6	0.0	4.6	4.0
Systems Design	2.7	1.5	0.4	0.0	4.6	4.1
TOTAL	2.6	2.0	1.2	0.1	5.8	4.5

Graduate Students:Faculty Ratio, 2012/13

Department	PhD	Rsch Master	Prof Master	Non Deg	All Students	Rsch Students
Architecture	n/a	5.6	n/a	0.4	5.9	5.6
Conrad	n/a	n/a	10.3	0.0	10.3	n/a
Chemical	3.3	1.5	0.8	0.1	5.7	4.8
Civil & Environmental	3.0	2.3	0.6	0.0	5.9	5.3
Electrical & Computer	3.4	1.9	1.5	0.0	6.9	5.3
Management Sciences	1.0	0.9	3.1	0.0	5.0	1.9
Mechanical & Mechatronics	2.3	2.4	0.6	0.0	5.3	4.7
Systems Design	2.9	1.5	0.7	0.1	5.1	4.4
TOTAL	2.6	2.1	1.2	0.1	6.0	4.7

6. Graduate Degrees Granted:Faculty Ratio, 2009/10

Department	PhD	Rsch Master	Prof Master	All Students	Rsch Students
Architecture	n/a	2.1	n/a	2.1	2.1
Conrad	n/a	n/a	42.0	42.0	n/a
Chemical	0.4	0.9	0.0	1.3	1.3
Civil & Environmental	0.4	0.8	0.8	2.0	1.2
Electrical & Computer	0.5	0.6	0.5	1.7	1.1
Management Sciences	0.4	0.6	2.3	3.4	1.0
Mechanical & Mechatronics	0.3	0.6	0.3	1.2	0.9
Systems Design	0.4	0.4	0.0	0.9	0.8
TOTAL	0.4	0.7	0.7	1.8	1.1

Graduate Degrees Granted:Faculty Ratio, 2010/11

Department	PhD	Rsch Master	Prof Master	All Students	Rsch Students
Architecture	n/a	3.3	0.0	3.3	3.3
Conrad	n/a	n/a	26.0	26.0	n/a
Chemical	0.4	0.8	0.3	1.4	1.1
Civil & Environmental	0.5	0.9	1.0	2.4	1.4
Electrical & Computer	0.5	0.8	0.6	1.9	1.3
Management Sciences	0.3	0.7	2.5	3.5	1.0
Mechanical & Mechatronics	0.2	0.9	0.8	1.9	1.1
Systems Design	0.5	0.5	0.2	1.2	1.0
TOTAL	0.4	0.9	0.9	2.3	1.3

Graduate Degrees Granted:Faculty Ratio, 2011/12

Department	PhD	Rsch Master	Prof Master	All Students	Rsch Students
Architecture	n/a	2.8	n/a	2.8	2.8
Conrad	n/a	n/a	14.3	14.3	n/a
Chemical	0.6	0.7	0.2	1.5	1.3
Civil & Environmental	0.2	0.7	0.7	1.6	1.0
Electrical & Computer	0.6	0.6	1.1	2.3	1.2
Management Sciences	0.3	0.7	3.5	4.5	1.0
Mechanical & Mechatronics	0.4	0.8	0.7	1.9	1.2
Systems Design	0.5	0.4	0.4	1.3	0.9
TOTAL	0.4	0.8	1.1	2.3	1.2

Graduate Degrees Granted:Faculty Ratio, 2012/13

Department	PhD	Rsch Master	Prof Master	All Students	Rsch Students
Architecture	n/a	2.3	n/a	2.3	2.3
Conrad	n/a	n/a	7.5	7.5	n/a
Chemical	0.5	0.8	0.2	1.5	1.3
Civil & Environmental	0.4	0.6	0.4	1.4	1.0
Electrical & Computer	0.6	0.7	1.3	2.6	1.3
Management Sciences	0.3	0.8	2.4	3.4	1.0
Mechanical & Mechatronics	0.3	0.6	0.6	1.5	0.8
Systems Design	0.5	0.9	0.2	1.5	1.3
TOTAL	0.4	0.8	0.9	2.1	1.2

7. Graduate Proportion of Total FTE Enrolment, 2009/10-2012/13

Department	2009/10	2010/11	2011/12	2012/13
Architecture	30.4%	26.9%	25.1%	24.6%
Conrad	100.0%	100.0%	100.0%	100.0%
Chemical	18.8%	18.1%	19.4%	19.9%
Civil & Environmental	25.1%	21.2%	21.6%	22.2%
Electrical & Computer	20.0%	21.1%	22.1%	22.1%
Management Sciences	50.6%	50.8%	38.3%	34.2%
Mechanical & Mechatronics	20.7%	21.0%	19.7%	21.3%
Systems Design	19.8%	20.2%	19.8%	21.0%
TOTAL	23.3%	23.1%	22.4%	22.8%

8. Graduate Financial Support, 2009/10

Research Master's Students	Total Income	% of FTEs Supported	Avg \$ Supported FTEs	% FTEs with GRS	% FTEs with TA	% FTEs with Ext Schlp
Architecture	815,371	50.2%	13,643	0.0%	16.5%	6.5%
Chemical	1,270,595	91.1%	24,388	73.5%	27.6%	14.0%
Civil & Environmental	1,678,710	92.8%	24,282	71.6%	24.2%	19.6%
Electrical & Computer	2,817,825	91.5%	28,744	67.8%	34.5%	29.0%
Management Sciences	511,488	91.6%	20,137	42.1%	54.3%	9.7%
Mechanical & Mechatronics	2,263,415	94.7%	23,985	77.2%	28.2%	24.4%
Systems Design	689,076	93.9%	24,320	54.1%	27.6%	36.5%
TOTAL	10,046,481	82.9%	23,521	52.9%	27.5%	19.3%

Doctoral Students	Total Income	% of FTEs Supported	Avg \$ Supported FTEs	% FTEs with GRS	% FTEs with TA	% FTEs with Ext Schlp
Chemical	2,636,063	96.0%	34,838	61.3%	35.1%	31.3%
Civil & Environmental	2,423,345	93.5%	32,719	69.4%	25.2%	27.3%
Electrical & Computer	8,029,297	95.9%	33,363	74.4%	35.3%	24.7%
Management Sciences	782,292	83.9%	36,330	41.6%	26.0%	40.5%
Mechanical & Mechatronics	3,009,167	94.4%	34,040	75.5%	32.1%	27.8%
Systems Design	1,786,981	97.6%	33,318	67.9%	35.7%	29.1%
TOTAL	18,667,144	95.0%	33,697	70.1%	33.0%	27.5%

Graduate Financial Support, 2010/11

Research Master's Students	Total Income	% of FTEs Supported	Avg \$ Supported FTEs	% FTEs with GRS	% FTEs with TA	% FTEs with Ext Schlp
Architecture	686,942	49.7%	13,434	0.0%	17.8%	7.8%
Chemical	1,002,248	87.4%	23,751	74.6%	29.2%	12.2%
Civil & Environmental	1,645,759	90.4%	26,530	66.3%	34.1%	33.1%
Electrical & Computer	2,997,804	93.0%	28,236	74.0%	35.4%	24.8%
Management Sciences	514,403	83.1%	21,735	41.0%	46.8%	17.9%
Mechanical & Mechatronics	2,116,708	93.6%	24,035	78.1%	30.1%	18.4%
Systems Design	702,033	88.5%	25,072	67.4%	29.5%	19.9%
TOTAL	9,665,896	82.2%	24,088	55.8%	30.2%	19.2%

Doctoral Students	Total Income	% of FTEs Supported	Avg \$ Supported FTEs	% FTEs with GRS	% FTEs with TA	% FTEs with Ext Schlp
Chemical	2,904,779	93.6%	34,871	66.7%	33.4%	32.8%
Civil & Environmental	2,588,636	94.5%	33,445	71.2%	36.6%	30.8%
Electrical & Computer	9,170,810	96.2%	35,110	77.8%	39.8%	25.1%
Management Sciences	873,167	82.9%	40,994	46.8%	27.2%	40.5%
Mechanical & Mechatronics	3,303,225	95.3%	32,901	77.6%	32.4%	25.5%
Systems Design	1,770,248	94.7%	33,027	69.1%	35.5%	35.3%
TOTAL	20,610,865	94.8%	34,513	73.3%	36.3%	28.5%

Graduate Financial Support, 2011/12

Research Master's Students	Total Income	% of FTEs Supported	Avg \$ Supported FTEs	% FTEs with GRS	% FTEs with TA	% FTEs with Ext Schlp
Architecture	\$523,669	48.9%	\$11,376	0.0%	20.2%	7.1%
Chemical	\$1,234,989	94.6%	\$24,279	76.6%	27.3%	19.8%
Civil & Environmental	\$1,577,429	90.0%	\$23,474	69.6%	22.9%	24.5%
Electrical & Computer	\$3,714,912	95.0%	\$28,872	73.4%	31.2%	24.8%
Management Sciences	\$522,318	86.4%	\$22,677	39.1%	55.6%	13.2%
Mechanical & Mechatronics	\$2,411,208	92.7%	\$25,927	73.1%	29.6%	24.6%
Systems Design	\$715,388	89.3%	\$25,550	56.3%	36.1%	20.2%
TOTAL	\$10,699,913	84.6%	\$24,496	56.9%	28.8%	20.1%

Doctoral Students	Total Income	% of FTEs Supported	Avg \$ Supported FTEs	% FTEs with GRS	% FTEs with TA	% FTEs with Ext Schlp
Chemical	\$3,084,290	96.7%	\$32,604	73.1%	29.6%	31.0%
Civil & Environmental	\$3,133,512	95.1%	\$33,791	74.0%	35.9%	31.5%
Electrical & Computer	\$9,390,829	96.6%	\$35,242	80.0%	38.6%	25.5%
Management Sciences	\$788,720	81.7%	\$38,226	49.2%	33.0%	35.6%
Mechanical & Mechatronics	\$3,369,462	94.3%	\$33,695	83.1%	31.2%	28.3%
Systems Design	\$1,964,717	95.2%	\$35,316	64.4%	35.9%	38.8%
TOTAL	\$21,731,531	95.3%	\$34,491	76.0%	35.2%	29.2%

Graduate Financial Support, 2012/13

Research Master's Students	Total Income	% of FTEs Supported	Avg \$ Supported FTEs	% FTEs with GRS	% FTEs with TA	% FTEs with Ext Schlp
Architecture	\$521,413	47.5%	\$12,240	0.0%	18.9%	7.8%
Chemical	\$1,164,423	94.3%	\$25,838	72.1%	26.4%	20.9%
Civil & Environmental	\$1,691,218	86.6%	\$23,435	65.5%	21.3%	25.0%
Electrical & Computer	\$4,137,061	96.0%	\$28,105	77.9%	31.2%	20.4%
Management Sciences	\$471,898	93.2%	\$25,280	59.9%	61.6%	6.7%
Mechanical & Mechatronics	\$3,003,730	93.8%	\$26,014	74.0%	25.3%	27.9%
Systems Design	\$767,018	88.5%	\$27,296	60.1%	30.4%	28.3%
TOTAL	\$11,756,761	85.5%	\$25,054	60.2%	27.0%	20.7%

Doctoral Students	Total Income	% of FTEs Supported	Avg \$ Supported FTEs	% FTEs with GRS	% FTEs with TA	% FTEs with Ext Schlp
Chemical	\$3,417,360	95.6%	\$34,015	67.2%	27.0%	37.6%
Civil & Environmental	\$3,560,164	95.5%	\$34,733	75.5%	30.4%	30.4%
Electrical & Computer	\$9,431,538	97.6%	\$35,470	80.6%	38.1%	23.7%
Management Sciences	\$719,760	81.2%	\$39,331	53.3%	41.9%	28.1%
Mechanical & Mechatronics	\$3,581,829	95.9%	\$33,350	80.4%	30.7%	20.8%
Systems Design	\$2,148,012	95.0%	\$36,572	63.1%	37.4%	39.1%
TOTAL	\$22,858,663	95.9%	\$34,990	75.2%	34.0%	28.0%

D. Research Data Tables

1. Total Sponsored Research Funding, 2009/10

Department	Tri-Council	Federal (excl Tri-Council)	Provincial	Industry	Other	Total
Architecture	\$105,410	\$20,000	\$0	\$280,000	\$38,504	\$443,914
Conrad	\$0	\$0	\$0	\$0	\$0	\$0
Chemical	\$2,618,800	\$772,670	\$304,665	\$1,877,210	\$930,961	\$6,504,305
Civil & Environmental	\$1,932,133	\$706,670	\$1,496,630	\$1,026,518	\$1,498,766	\$6,660,717
Electrical & Computer	\$6,042,813	\$2,280,595	\$6,118,167	\$1,991,613	\$1,504,411	\$17,937,599
Management Sciences	\$552,356	\$124,865	\$50,000	\$40,000	\$43,741	\$810,962
Mechanical & Mechatronics	\$2,466,593	\$1,747,321	\$4,401,193	\$1,019,023	\$923,061	\$10,557,190
Systems Design	\$1,802,965	\$832,250	\$356,207	\$1,121,660	\$175,737	\$4,288,819
Other	\$19,016	\$1,394,714	\$2,244,462	\$0	\$157,462	\$3,815,654
TOTAL	\$15,540,086	\$7,879,085	\$14,971,324	\$7,356,023	\$5,272,643	\$51,019,162

Total Sponsored Research Funding, 2010/11

Department	Tri-Council	Federal (excl Tri-Council)	Provincial	Industry	Other	Total
Architecture	\$221,982	\$0	\$0	\$0	\$28,660	\$250,642
Conrad	\$0	\$0	\$0	\$39,000	\$0	\$39,000
Chemical	\$2,221,387	\$812,848	\$219,583	\$952,314	\$815,379	\$5,021,511
Civil & Environmental	\$2,414,791	\$1,603,848	\$2,228,456	\$1,510,391	\$1,416,115	\$9,173,601
Electrical & Computer	\$5,975,556	\$2,175,059	\$5,345,258	\$3,111,081	\$1,818,713	\$18,425,667
Management Sciences	\$620,620	\$86,535	\$50,000	\$50,000	\$16,000	\$823,155
Mechanical & Mechatronics	\$3,282,552	\$4,298,188	\$6,755,400	\$1,985,028	\$2,822,621	\$19,143,789
Systems Design	\$1,286,526	\$681,246	\$457,608	\$614,340	\$504,428	\$3,544,148
Other	\$18,000	\$1,597,353	\$2,244,462	\$0	\$79,282	\$3,939,097
TOTAL	\$16,041,414	\$11,255,077	\$17,300,767	\$8,262,154	\$7,501,198	\$60,360,610

Total Sponsored Research Funding, 2011/12

Department	Tri-Council	Federal (excl Tri-Council)	Provincial	Industry	Other	Total
Architecture	\$107,931	\$1,900	\$0	\$0	\$8,000	\$117,831
Conrad	\$0	\$0	\$0	\$39,000	\$8,000	\$47,000
Chemical	\$2,373,777	\$984,804	\$205,548	\$3,501,044	\$623,805	\$7,688,978
Civil & Environmental	\$2,240,011	\$643,738	\$2,518,965	\$977,600	\$1,390,123	\$7,770,436
Electrical & Computer	\$6,549,589	\$2,194,106	\$6,187,849	\$4,250,349	\$4,591,567	\$23,773,458
Management Sciences	\$700,646	\$82,500	\$89,000	\$15,000	\$0	\$887,146
Mechanical & Mechatronics	\$2,388,219	\$6,417,160	\$8,364,486	\$1,351,549	\$2,780,848	\$21,302,262
Systems Design	\$1,338,012	\$724,600	\$450,191	\$680,869	\$377,686	\$3,571,359
Other	\$12,700	\$328,941	\$0	\$12,000	\$254,309	\$607,950
TOTAL	\$15,710,885	\$11,377,749	\$17,816,039	\$10,827,411	\$10,034,339	\$65,766,421

Total Sponsored Research Awards, 2011/12

Department	Tri-Council	Federal (excl Tri-Council)	Provincial	Industry	Other	Total
Architecture	3	1	0	0	1	5
Conrad	0	0	0	1	1	2
Chemical	61	20	10	50	24	165
Civil & Environmental	61	27	34	50	36	208
Electrical & Computer	141	45	56	83	70	395
Management Sciences	25	6	1	2	1	35
Mechanical & Mechatronics	84	38	31	77	69	299
Systems Design	39	14	9	31	19	112
Other	1	1	0	1	2	5
TOTAL	415	152	141	295	223	1226

Total Sponsored Research Funding, 2012/13

Department	Tri-Council	Federal (excl Tri-Council)	Provincial	Industry	Other	Total
Architecture	\$370,727	\$4,360	\$0	\$0	\$16,000	\$391,087
Conrad	\$0	\$0	\$0	\$0	\$411,497	\$411,497
Chemical	\$2,168,846	\$854,066	\$223,424	\$1,769,316	\$898,812	\$5,914,463
Civil & Environmental	\$3,106,550	\$928,162	\$5,054,018	\$1,237,518	\$2,031,306	\$12,357,554
Electrical & Computer	\$6,438,058	\$2,063,635	\$5,752,492	\$3,556,092	\$2,525,795	\$20,336,072
Management Sciences	\$854,853	\$15,000	\$41,000	\$0	\$66,000	\$976,853
Mechanical & Mechatronics	\$3,153,054	\$4,197,401	\$3,968,721	\$1,353,971	\$1,608,228	\$14,281,376
Systems Design	\$1,409,225	\$439,450	\$422,137	\$1,061,595	\$1,833,121	\$5,165,527
Other	\$14,524	\$384,075	\$0	\$0	\$263,521	\$662,120
TOTAL	\$17,515,837	\$8,886,149	\$15,461,792	\$8,978,491	\$9,654,281	\$60,496,549

Total Sponsored Research Awards, 2012/13

Department	Tri-Council	Federal (excl Tri-Council)	Provincial	Industry	Other	Total
Architecture	6	2	0	0	3	11
Conrad	0	0	0	2	4	6
Chemical	64	19	9	30	34	156
Civil & Environmental	74	29	41	51	48	243
Electrical & Computer	147	56	58	122	79	462
Management Sciences	31	3	1	3	5	43
Mechanical & Mechatronics	99	59	35	85	46	324
Systems Design	41	12	8	24	26	111
Other	2	1	0	0	2	5
TOTAL	464	181	152	317	247	1361

2. Total Tri-Council Funding, 2009/10

Department	CIHR	SSHRC	NSERC	Total
Architecture	\$0	\$105,410	\$0	\$105,410
Conrad	\$0	\$0	\$0	\$0
Chemical	\$58,550	\$0	\$2,560,250	\$2,618,800
Civil & Environmental	\$57,717	\$0	\$1,874,416	\$1,932,133
Electrical & Computer	\$70,360	\$0	\$5,972,453	\$6,042,813
Management Sciences	\$0	\$298,598	\$253,758	\$552,356
Mechanical & Mechatronics	\$0	\$0	\$2,466,593	\$2,466,593
Systems Design	\$0	\$0	\$1,802,965	\$1,802,965
Other	\$0	\$0	\$19,016	\$19,016
TOTAL	\$186,627	\$404,008	\$14,949,451	\$15,540,086

Total Tri-Council Funding, 2010/11

Department	CIHR	SSHRC	NSERC	Total
Architecture	\$0	\$221,982	\$0	\$221,982
Conrad	\$0	\$0	\$0	\$0
Chemical	\$135,684	\$0	\$2,085,703	\$2,221,387
Civil & Environmental	\$57,717	\$0	\$2,357,074	\$2,414,791
Electrical & Computer	\$0	\$0	\$5,975,556	\$5,975,556
Management Sciences	\$0	\$311,598	\$309,022	\$620,620
Mechanical & Mechatronics	\$0	\$0	\$3,282,552	\$3,282,552
Systems Design	\$0	\$0	\$1,286,526	\$1,286,526
Other	\$0	\$0	\$18,000	\$18,000
TOTAL	\$193,401	\$533,580	\$15,314,433	\$16,041,414

Total Tri-Council Funding & Awards, 2011/12

Department	CIHR		SSHRC		NSERC		Total	
	\$	#	\$	#	\$	#	\$	#
Architecture	\$0	0	\$107,931	3	\$0	0	\$107,931	3
Conrad	\$0	0	\$0	0	\$0	0	\$0	0
Chemical	\$76,634	1	\$0	0	\$2,297,143	60	\$2,373,777	61
Civil & Environmental	\$0	0	\$0	0	\$2,240,011	61	\$2,240,011	61
Electrical & Computer	\$0	0	\$0	0	\$6,549,589	141	\$6,549,589	141
Management Sciences	\$0	0	\$311,098	3	\$389,548	22	\$700,646	25
Mechanical & Mechatronics	\$0	0	\$0	0	\$2,388,219	84	\$2,388,219	84
Systems Design	\$0	0	\$0	0	\$1,338,012	39	\$1,338,012	39
Other	\$0	0	\$0	0	\$12,700	1	\$12,700	1
TOTAL	\$76,634	1	\$419,029	6	\$15,215,222	408	\$15,710,885	415

Total Tri-Council Funding & Awards, 2012/13

Department	CIHR		SSHRC		NSERC		Total	
	\$	#	\$	#	\$	#	\$	#
Architecture	\$0	0	\$370,727	6	\$0	0	\$370,727	6
Conrad	\$0	0	\$0	0	\$0	0	\$0	0
Chemical	\$97,919	1	\$0	0	\$2,070,927	63	\$2,168,846	64
Civil & Environmental	\$0	0	\$0	0	\$3,106,550	74	\$3,106,550	74
Electrical & Computer	\$14,900	0	\$0	0	\$6,423,158	146	\$6,438,058	146
Management Sciences	\$0	1	\$336,230	4	\$518,623	27	\$854,853	32
Mechanical & Mechatronics	\$0	0	\$0	0	\$3,153,054	99	\$3,153,054	99
Systems Design	\$0	0	\$0	0	\$1,409,225	41	\$1,409,225	41
Other	\$0	0	\$0	0	\$14,524	2	\$14,524	2
TOTAL	\$112,819	2	\$706,957	10	\$16,696,061	452	\$17,515,837	464

3. NSERC Funding by type, 2009/10

Department	Discovery	RTI	Strategic	Industry	Other	Total
Architecture	\$0	\$0	\$0	\$0	\$0	\$0
Conrad	\$0	\$0	\$0	\$0	\$0	\$0
Chemical	\$1,152,604	\$446,745	\$188,380	\$635,701	\$136,820	\$2,560,250
Civil & Environmental	\$867,922	\$149,939	\$0	\$720,949	\$135,606	\$1,874,416
Electrical & Computer	\$2,366,464	\$359,970	\$1,694,504	\$1,353,015	\$198,500	\$5,972,453
Management Sciences	\$253,758	\$0	\$0	\$0	\$0	\$253,758
Mechanical & Mechatronics	\$1,186,299	\$299,275	\$98,065	\$712,235	\$170,719	\$2,466,593
Systems Design	\$645,761	\$336,223	\$126,656	\$489,525	\$204,800	\$1,802,965
Other	\$0	\$0	\$0	\$0	\$19,016	\$19,016
TOTAL	\$6,472,808	\$1,592,152	\$2,107,605	\$3,911,425	\$865,461	\$14,949,451

NSERC Funding by type, 2010/11

Department	Discovery	RTI	Strategic	Industry	Other	Total
Architecture	\$0	\$0	\$0	\$0	\$0	\$0
Conrad	\$0	\$0	\$0	\$0	\$0	\$0
Chemical	\$1,049,519	\$315,091	\$96,064	\$486,709	\$138,320	\$2,085,703
Civil & Environmental	\$963,600	\$328,838	\$0	\$955,576	\$109,060	\$2,357,074
Electrical & Computer	\$2,410,571	\$300,687	\$1,780,950	\$1,314,348	\$169,000	\$5,975,556
Management Sciences	\$290,355	\$0	\$0	\$18,667	\$0	\$309,022
Mechanical & Mechatronics	\$1,251,441	\$292,482	\$74,000	\$1,513,810	\$150,819	\$3,282,552
Systems Design	\$549,241	\$0	\$0	\$509,465	\$227,820	\$1,286,526
Other	\$0	\$0	\$0	\$0	\$18,000	\$18,000
TOTAL	\$6,514,727	\$1,237,098	\$1,951,014	\$4,798,575	\$813,019	\$15,314,433

NSERC Funding by type, 2011/12

Department	Discovery	RTI	Strategic	Industry	Other	Total
Architecture	\$0	\$0	\$0	\$0	\$0	\$0
Conrad	\$0	\$0	\$0	\$0	\$0	\$0
Chemical	\$1,041,459	\$259,873	\$80,660	\$784,831	\$130,320	\$2,297,143
Civil & Environmental	\$973,700	\$0	\$0	\$1,113,311	\$153,000	\$2,240,011
Electrical & Computer	\$2,553,399	\$167,286	\$1,747,783	\$1,918,620	\$162,500	\$6,549,589
Management Sciences	\$328,500	\$0	\$0	\$61,048	\$0	\$389,548
Mechanical & Mechatronics	\$1,290,063	\$0	\$74,000	\$853,156	\$171,000	\$2,388,219
Systems Design	\$642,121	\$127,183	\$0	\$458,708	\$110,000	\$1,338,012
Other	\$0	\$0	\$0	\$0	\$12,700	\$12,700
TOTAL	\$6,829,242	\$554,342	\$1,902,443	\$5,189,674	\$739,520	\$15,215,222

NSERC Awards by type, 2011/12

Department	Discovery	RTI	Strategic	Industry	Other	Total
Architecture	0	0	0	0	0	0
Conrad	0	0	0	0	0	0
Chemical	36	2	1	18	3	60
Civil & Environmental	39	0	0	20	2	61
Electrical & Computer	88	2	11	38	2	141
Management Sciences	20	0	0	2	0	22
Mechanical & Mechatronics	57	0	2	22	3	84
Systems Design	23	2	0	10	4	39
Other	0	0	0	0	1	1
TOTAL	263	6	14	110	15	408

NSERC Funding by type, 2012/13

Department	Discovery	RTI	Strategic	Industry	Other	Total
Architecture	\$0	\$0	\$0	\$0	\$0	\$0
Conrad	\$0	\$0	\$0	\$0	\$0	\$0
Chemical	\$986,238	\$54,585	\$239,160	\$705,444	\$85,500	\$2,070,927
Civil & Environmental	\$929,700	\$149,648	\$0	\$1,888,702	\$138,500	\$3,106,550
Electrical & Computer	\$2,595,375	\$193,590	\$1,346,648	\$2,126,545	\$161,000	\$6,423,158
Management Sciences	\$407,000	\$0	\$0	\$111,623	\$0	\$518,623
Mechanical & Mechatronics	\$1,383,290	\$114,371	\$217,400	\$1,193,993	\$244,000	\$3,153,054
Systems Design	\$729,270	\$149,400	\$0	\$433,055	\$97,500	\$1,409,225
Other	\$0	\$0	\$0	\$0	\$14,524	\$14,524
TOTAL	\$7,030,873	\$661,594	\$1,803,208	\$6,459,362	\$741,024	\$16,696,061

NSERC Awards by type, 2012/13

Department	Discovery	RTI	Strategic	Industry	Other	Total
Architecture	0	0	0	0	0	0
Conrad	0	0	0	0	0	0
Chemical	36	1	2	22	2	63
Civil & Environmental	38	1	0	32	3	74
Electrical & Computer	93	2	7	41	3	146
Management Sciences	23	0	0	4	0	27
Mechanical & Mechatronics	59	3	3	29	5	99
Systems Design	26	1	0	11	3	41
Other	0	0	0	0	2	2
TOTAL	275	8	12	139	18	452

4. Provincial Funding by type, 2010/11

Department	ORF:RE	ORF:RI	OCE	ERA	Other	Total
Architecture	\$0	\$0	\$0	\$0	\$0	\$0
Conrad	\$0	\$0	\$0	\$0	\$0	\$0
Chemical	\$58,339	\$36,080	\$56,970	\$68,194	\$0	\$219,583
Civil & Environmental	\$813,520	\$468,909	\$148,001	\$28,000	\$770,026	\$2,228,456
Electrical & Computer	\$3,800,713	\$150,000	\$719,273	\$327,242	\$348,030	\$5,345,258
Management Sciences	\$0	\$0	\$50,000	\$0	\$0	\$50,000
Mechanical & Mechatronics	\$3,679,831	\$1,813,350	\$928,190	\$191,404	\$142,625	\$6,755,400
Systems Design	\$0	\$0	\$429,608	\$28,000	\$0	\$457,608
Other	\$0	\$2,244,462	\$0	\$0	\$0	\$2,244,462
TOTAL	\$8,352,403	\$4,712,801	\$2,332,042	\$642,840	\$1,260,681	\$17,300,767

Provincial Funding by type, 2011/12

Department	ORF:RE	ORF:RI	OCE	ERA	Other	Total
Architecture	\$0	\$0	\$0	\$0	\$0	\$0
Conrad	\$0	\$0	\$0	\$0	\$0	\$0
Chemical	\$26,926	\$0	\$108,198	\$20,424	\$50,000	\$205,548
Civil & Environmental	\$695,705	\$14,741	\$411,280	\$17,213	\$1,380,025	\$2,518,965
Electrical & Computer	\$3,721,763	\$1,182,170	\$561,341	\$296,044	\$426,530	\$6,187,849
Management Sciences	\$0	\$0	\$89,000	\$0	\$0	\$89,000
Mechanical & Mechatronics	\$4,174,172	\$3,022,776	\$605,904	\$102,284	\$459,350	\$8,364,486
Systems Design	\$0	\$60,000	\$321,891	\$0	\$68,300	\$450,191
Other	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$8,618,566	\$4,279,687	\$2,097,614	\$435,965	\$2,384,206	\$17,816,039

Provincial Awards by type, 2011/12

Department	ORF:RE	ORF:RI	OCE	ERA	Other	Total
Architecture	0	0	0	0	0	0
Conrad	0	0	0	0	0	0
Chemical	2	0	6	1	1	10
Civil & Environmental	11	1	7	1	14	34
Electrical & Computer	28	2	11	10	5	56
Management Sciences	0	0	1	0	0	1
Mechanical & Mechatronics	8	2	8	3	10	31
Systems Design	0	1	6	0	2	9
Other	0	0	0	0	0	0
TOTAL	49	6	39	15	32	141

Provincial Funding by type, 2012/13

Department	ORF:RE	ORF:RI	OCE	ERA	Other	Total
Architecture	\$0	\$0	\$0	\$0	\$0	\$0
Conrad	\$0	\$0	\$0	\$0	\$0	\$0
Chemical	\$0	\$139,905	\$17,175	\$66,344		\$223,424
Civil & Environmental	\$1,369,791	\$1,568,313	\$293,965	\$30,751	\$1,791,198	\$5,054,018
Electrical & Computer	\$4,048,950	\$0	\$1,002,010	\$235,532	\$466,000	\$5,752,492
Management Sciences		\$0	\$0		\$41,000	\$41,000
Mechanical & Mechatronics	\$2,523,331	\$606,319	\$465,999	\$65,222	\$307,850	\$3,968,721
Systems Design	\$0	\$0	\$265,443	\$26,694	\$130,000	\$422,137
Other			\$0		\$0	\$0
TOTAL	\$7,942,072	\$2,314,537	\$2,044,592	\$424,543	\$2,736,048	\$15,461,792

Provincial Awards by type, 2012/13

Department	ORF:RE	ORF:RI	OCE	ERA	Other	Total
Architecture	0	0	0	0	0	0
Conrad	0	0	0	0	0	0
Chemical	1	2	3	3	0	9
Civil & Environmental	13	6	5	1	16	41
Electrical & Computer	31	0	13	9	5	58
Management Sciences	0	0	0	0	1	1
Mechanical & Mechatronics	6	8	10	2	9	35
Systems Design	0	0	3	1	4	8
Other	0	0	0	0	0	0
TOTAL	51	16	34	16	35	152

5. Industry Funding by source, 2010/11

Department	Canada	US	Int'l	Total
Architecture	\$0	\$0	\$0	\$0
Conrad	\$39,000	\$0	\$0	\$39,000
Chemical	\$369,205	\$172,520	\$410,589	\$952,314
Civil & Environmental	\$1,474,639	\$35,752	\$0	\$1,510,391
Electrical & Computer	\$2,504,637	\$540,679	\$65,765	\$3,111,081
Management Sciences	\$50,000	\$0	\$0	\$50,000
Mechanical & Mechatronics	\$1,561,010	\$286,366	\$137,652	\$1,985,028
Systems Design	\$315,741	\$298,599	\$0	\$614,340
Other	\$0	\$0	\$0	\$0
TOTAL	\$6,314,232	\$1,333,916	\$614,006	\$8,262,154

Industry Funding & Awards by source, 2011/12

Department	Canada		US		Int'l		Total	
	\$	#	\$	#	\$	#	\$	#
Architecture	\$0	0	\$0	0	\$0	0	\$0	0
Conrad	\$39,000	1	\$0	0	\$0	0	\$39,000	1
Chemical	\$162,043	33	\$272,047	10	\$3,066,954	7	\$3,501,044	50
Civil & Environmental	\$911,203	46	\$66,397	4	\$0	0	\$977,600	50
Electrical & Computer	\$3,399,720	68	\$733,878	12	\$116,750	3	\$4,250,349	83
Management Sciences	\$15,000	2	\$0	0	\$0	0	\$15,000	2
Mechanical & Mechatronics	\$991,971	67	\$263,175	8	\$96,404	2	\$1,351,549	77
Systems Design	\$232,950	25	\$273,800	5	\$174,119	1	\$680,869	31
Other	\$0	0	\$12,000	1	\$0	0	\$12,000	1
TOTAL	\$5,751,887	242	\$1,621,296	40	\$3,454,227	13	\$10,827,411	295

Industry Funding by source, 2012/13

Department	Canada		US		Int'l		Total	
	\$	#	\$	#	\$	#	\$	#
Architecture	\$0	0	\$0	0	\$0	0	\$0	0
Conrad	\$0	2	\$0	0	\$0	0	\$0	2
Chemical	\$54,577	21	\$155,299	4	\$1,559,440	5	\$1,769,316	30
Civil & Environmental	\$921,891	45	\$268,566	5	\$47,060	1	\$1,237,518	51
Electrical & Computer	\$3,005,426	102	\$349,772	12	\$200,894	8	\$3,556,092	122
Management Sciences	\$0	3	\$0	0		0	\$0	3
Mechanical & Mechatronics	\$754,891	70	\$528,550	14	\$70,530	1	\$1,353,971	85
Systems Design	\$380,001	17	\$545,316	6	\$136,278	1	\$1,061,595	24
Other	\$0	0	\$0	0	\$0	0	\$0	0
TOTAL	\$5,116,786	260	\$1,847,503	41	\$2,014,202	16	\$8,978,491	317

6. Total Sponsored Research Funding:Faculty Ratio, 2009/10-2012/13

Department	2009/10	2010/11	2011/12	2012/13
Architecture	\$29,594	\$16,709	\$7,364	\$23,005
Conrad	n/a	\$19,500	\$15,667	\$102,874
Chemical	\$209,816	\$152,167	\$226,146	\$179,226
Civil & Environmental	\$200,322	\$267,921	\$214,416	\$336,260
Electrical & Computer	\$245,721	\$239,294	\$308,746	\$248,001
Management Sciences	\$42,128	\$40,650	\$36,583	\$42,015
Mechanical & Mechatronics	\$211,144	\$375,368	\$409,659	\$277,308
Systems Design	\$184,069	\$166,392	\$159,935	\$231,327
TOTAL	\$207,564	\$237,837	\$248,344	\$224,202
Excluding Architecture & Conrad	\$220,084	\$253,689	\$266,868	\$239,899

7. Total Sponsored Research Awards:Faculty Ratio, 2011/12-2012/13

Department	2011/12	2012/13
Architecture	0.31	0.65
Conrad	0.67	1.50
Chemical	4.85	4.73
Civil & Environmental	5.74	6.61
Electrical & Computer	5.13	5.63
Management Sciences	1.44	1.85
Mechanical & Mechatronics	5.75	6.29
Systems Design	5.02	4.97
TOTAL	4.63	5.04
Excluding Architecture & Conrad	4.96	5.40

8. Total Sponsored Research Funding:Budget, 2009/10-2012/13

	2009/10	2010/11	2011/12	2012/13
Faculty of Engineering TOTAL	0.82	0.94	0.97	0.83
Excluding Architecture & Conrad	0.88	1.01	1.05	0.88

9. Total Research Chair Holders, 2011

Department	Cda Rsch Chair	Endowed Chair	NSERC Chair	Other Chair	Univ Rsch Chair	Univ Prof
Architecture						1
Conrad		1				
Chemical	3		1		2	2
Civil & Environmental	3	1.5	2			
Electrical & Computer	6	2	5	1	6	
Management Sciences		0.5				
Mechanical & Mechatronics	5		1		1	
Systems Design	2		1			1
Other						
TOTAL	19.0	5.0	10.0	1.0	9.0	4.0

Total Research Chair Holders, 2012

Department	Cda Rsch Chair	Endowed Chair	NSERC Chair	Other Chair	Univ Rsch Chair	Univ Prof
Architecture						1
Conrad		1				
Chemical	4		1		2	2
Civil & Environmental	3	1.5	2			
Electrical & Computer	6	2	5	1	5	
Management Sciences		0.5				
Mechanical & Mechatronics	5		1		1	
Systems Design	2		1			1
Other						
TOTAL	20.0	5.0	10.0	1.0	8.0	4.0

Total Research Chair Holders, 2013

Department	Cda Rsch Chair	Endowed Chair	NSERC Chair	Other Chair	Univ Rsch Chair	Univ Prof
Architecture						1
Conrad						
Chemical	4				3	2
Civil & Environmental	2	1	2			
Electrical & Computer	6	2	4	1	5	
Management Sciences		1				
Mechanical & Mechatronics	3		1		1	
Systems Design	2		1			1
Other						
TOTAL	17.0	4.0	8.0	1.0	9.0	4.0

Research Chair Holders, 2013

Canada Research Chairs, Tier 1

Chair Holder	Title
Carl Haas, CEE	CRC in Infrastructure Construction and Management
Amir Khajepour, MME	CRC in Mechatronic Vehicle Systems
Amir Khandani, ECE	CRC in Wireless Systems
Raafat Mansour, ECE	CRC in Micro and Nano Integrated RF Systems
Alexander Penlidis, CHE	CRC in Engineering of Polymers with Tailor-made Properties
Catherine Rosenberg, ECE	CRC in the Future Internet
Michael Worswick, MME	CRC in Light Weight Materials under Extreme Deformation: Forming and Impact
En-hui Yang, ECE	CRC in Information Theory and Multimedia Data Compression
Weihua Zhuang, ECE	CRC in Wireless Communication Networks

Canada Research Chairs, Tier 2

Chair Holder	Title
Pu Chen, CHE	CRC in Nano-Bio-Materials
C. Perry Chou, CHE	CRC in Novel Strategies for High-Level Recombinant Protein Production
Ehab El-Saadany, ECE	CRC in Energy Systems
Chris Eliasmith, SDE	CRC in Theoretical Neuroscience
Frank Gu, CHE	CRC in Advanced Targeted Delivery Systems
Carolyn Ren, MME	CRC in Lab-on-a-Chip Technology
Susan Tighe, CEE	CRC in Pavements and Infrastructure Management
John Yeow, SDE	CRC in Micro and Nano Devices

NSERC Industrial Research Chairs

Chair Holder	Title
Hany Aziz, ECE	NSERC/Dalsa Chair in organic Light Emitting Devices and Related Electronic Technologies
Krzysztof Czarnecki, ECE	NSERC/Bank of Nova Scotia Chair in Requirements Engineering of Service-Oriented Software
Peter Huck, CEE	NSERC Chair in Water Treatment
Amir Khandani, ECE	NSERC/Nortel Chair in Advanced Telecommunications Technologies
John McPhee, SDE	NSERC/Toyota/Maplesoft Chair in Mathematics-Based Modelling and Design
Mahesh Pandey, CEE	NSERC/UNENE Chair in Risk-Based Life Cycle Management of Engineering Systems
Ali Safavi-Naeini, ECE	NSERC/Research in Motion Chair in Intelligent Integrated Radio/Antenna Systems

Endowed Chairs

Chair Holder	Title
Claudio Canizares, ECE	Hydro One Research Chair
Sujeet Chaudhuri, ECE	Val O'Donovan Chair in RF/Microwaves and Photonics
Jatin Nathwani, CEE/MSci	Ontario Research Chair in Public Policy and Sustainable Energy Management
Susan Tighe, CEE	Norman W. McLeod Professor in Sustainable Pavement Engineering

Other Research/Design Chairs

Chair Holder	Title
Steve Lambert, MME	NSERC Design Chair in Collaborative Design
Siva Sivothythaman, ECE	Ontario Research Chair in Renewable Energy Technologies and Health

University Research Chairs and University Professors

University Research Chairs	University Professors
Rick Culham, MME	Keith Hipel, SDE
Shesha Jayaram, ECE	Flora Ng, CHE
Mohamed Kamel, ECE	Garry Rempel, CHE
Fakhri Karray, ECE	Robert Jan van Pelt, ARCH
Flora Ng, CHE	
Manoj Sachdev, ECE	
Xuemin Shen, ECE	
Joao Soares, CHE	
Michael Tam, CHE	

E. Women in Engineering Data Tables

1. Women in Engineering Disciplines, 2009-2012

	2009		2010		2011		2012	
	#	%	#	%	#	%	#	%
Undergraduate First-year Class	229	17.1%	240	16.1%	305	20.6%	334	21.0%
All Undergraduate Students	934	16.7%	997	16.7%	1096	17.7%	1197	18.5%
Undergraduate Degrees Granted	122	15.5%	134	15.5%	162	17.1%	156	15.8%
All Graduate Students	368	22.0%	380	22.1%	382	22.2%	407	22.3%
All Graduate Degrees Granted	100	22.5%	109	20.8%	125	22.0%	134	25.3%
PhD Degrees Granted	20	20.8%	14	14.9%	17	14.7%	26	22.6%
Faculty Members	27.5	11.9%	31	12.7%	32	12.5%	36	13.4%

2. Women in Architecture, 2009-2012

	2009		2010		2011		2012	
	#	%	#	%	#	%	#	%
Undergraduate First-year Class	35	50.0%	45	59.2%	45	60.8%	43	56.6%
All Undergraduate Students	189	54.3%	200	54.3%	204	58.0%	209	56.5%
Undergraduate Degrees Granted	33	51.6%	32	57.1%	40	52.6%	33	58.9%
All Graduate Students	74	49.7%	61	50.0%	62	52.1%	62	51.2%
All Graduate Degrees Granted	23	71.9%	24	49.0%	27	61.4%	20	51.3%
Faculty Members	6	35.3%	6	37.5%	6	37.5%	7	38.9%

F. Internationalization Data Tables

1. International Students, 2009-2012

	2009		2010		2011		2012	
	#	%	#	%	#	%	#	%
Undergraduate Year One New Admissions	138	9.8%	172	11.0%	222	14.3%	218	13.9%
All Undergraduate Students	375	6.3%	462	7.3%	594	9.1%	698	10.8%
Undergraduate Degrees Granted	26	3.1%	30	3.3%	37	3.6%	51	4.9%
Undergraduate Co-op Work Terms	635	10.0%	801	11.8%	847	12.1%	1074	14.5%
All Graduate Students	556	30.6%	626	33.9%	682	37.3%	806	41.4%
All Graduate Degrees Granted	85	19.0%	110	19.2%	149	24.3%	171	30.1%
Outgoing Exchange Students	74	n/a	89	n/a	96	n/a	91	n/a
Incoming Exchange Students	180	n/a	204	n/a	205	n/a	205	n/a

G. Advancement Data Tables

1. Total Alumni, 2009-2012

	2009		2010		2011		2012	
	#	% valid*						
Architecture	1,817	88.1%	1,871	89.0%	1,948	89.7%	2,017	88.2%
Conrad	198	99.5%	250	99.6%	293	99.3%	321	99.1%
Chemical Engineering	3,883	88.8%	4,067	89.4%	4,248	89.8%	4,443	88.6%
Civil & Environmental Engineering	6,049	89.6%	6,195	90.1%	6,365	90.2%	6,576	88.4%
Electrical & Computer Engineering	8,659	91.1%	9,088	91.8%	9,607	92.1%	10,196	90.6%
Management Sciences	1,308	83.6%	1,387	85.1%	1,521	86.3%	1,650	85.3%
Mechanical & Mechatronics Engineering	6,939	90.8%	7,195	91.3%	7,455	91.4%	7,751	90.0%
Systems Design Engineering	2,901	92.5%	2,979	92.7%	3,074	92.9%	3,186	91.5%
TOTAL	31,754	90.1%	33,032	90.8%	34,511	91.1%	36,140	89.6%

2. Engineering Alumni Donating to University of Waterloo, 2009-2012

	2009		2010		2011		2012	
	#	% **	#	% **	#	% **	#	% **
Architecture	103	6.4%	55	3.3%	87	5.0%	69	3.9%
Conrad	11	5.6%	4	1.6%	8	2.7%	3	0.9%
Chemical Engineering	240	7.0%	264	7.3%	340	8.9%	284	7.2%
Civil & Environmental Engineering	357	6.6%	399	7.2%	472	8.2%	442	7.6%
Electrical & Computer Engineering	464	5.9%	556	6.7%	662	7.5%	504	5.5%
Management Sciences	55	5.0%	71	6.0%	87	6.6%	78	5.5%
Mechanical & Mechatronics Engineering	406	6.4%	471	7.2%	581	8.5%	502	7.2%
Systems Design Engineering	164	6.1%	248	9.0%	246	8.6%	190	6.5%
TOTAL	1800	6.3%	2068	6.9%	2483	7.9%	2,072	6.4%

* Valid alumni are those for whom the Alumni Affairs Office has at least one current method of contact

** % donating is calculated as the percent of valid alumni

3. Engineering Alumni Donating to University of Waterloo, lifetime

Department	# Donating	% Donating
Architecture	594	33.4%
Conrad	33	10.4%
Chemical Engineering	1,857	47.2%
Civil & Environmental Engineering	2,826	48.6%
Electrical & Computer Engineering	3,631	39.3%
Management Sciences	467	33.2%
Mechanical & Mechatronics Engineering	3,332	47.8%
Systems Design Engineering	1,410	48.4%
TOTAL	14,150	43.7%

4. Funds Raised for the Faculty of Engineering, 2010/11-2012/13

	2010/11	2011/12	2012/13
Cash Received	\$5,236,195	\$5,001,984	\$8,001,495
New Pledges Received	\$10,600,000	\$6,599,720	\$6,688,889

5. Vision 2010 Campaign Progress to May 1, 2013

Priority Project	Goal	\$ Raised	% of Goal
Facilities	\$61.5 M	\$46.2 M	75.1%
Grad Scholarships	\$23.0 M	\$15.3 M	66.5%
Chairs	\$30.0 M	\$11.1 M	37.0%
Other	\$5.5 M	\$23.6 M	429.1%
TOTAL	\$120 M	\$96.2 M	80.2%

6. Alumni Attending Selected Class Reunions, 2012

Department	5	10	15	20	25	30	35	40	45	50
Chemical Engineering	2.1%	2.3%	1.8%	27.3%	9.5%	35.8%	14.8%	47.1%	0.0%	37.5%
Civil & Environmental Engineering	0.8%	0.9%	9.4%	0.0%	6.1%	0.0%	14.5%	4.7%	2.3%	63.6%
Electrical & Computer Engineering	0.8%	2.5%	0.7%	6.5%	26.4%	5.9%	9.5%	5.1%	5.0%	80.0%
Mechanical & Mechatronics Engineering	0.0%	0.0%	1.8%	4.9%	3.3%	20.2%	24.7%	8.3%	0.0%	23.1%
Systems Design Engineering	1.2%	17.7%	0.0%	6.3%	38.3%	0.0%	18.6%	0.0%	9.0%	-
OVERALL PARTICIPATION	0.7%	3.3%	2.5%	7.0%	10.0%	11.7%	14.7%	13.8%	5.3%	50.0%

7. Waterloo Engineering Alumni Events, 2012

Event	City	Date	Attendance*
Alumni Ski Day	Collingwood, ON	20-Jan-12	269
Alumni & Friends Reception at TRB	Washington, DC	24-Jan-12	110
Alumni & Friends Reception at the IEEE ISSCC	San Francisco, CA	21-Feb-12	60
Alumni & Friends Reception at the Computer History Museum	Mountain View, CA	23-Feb-12	95
Curling Social	Toronto, ON	31-Mar-12	40
Designing the Future: 4th Year Student Design Project Showcase	Waterloo, ON	4-Apr-12	100
Waterloo Engineering Reception in Ottawa	Ottawa, ON	26-Apr-12	60
Waterloo Architecture (and Civil) Alumni Reception at OAA	Toronto, ON	10-May-12	75
Engineering Class of 2012 Post-Convocation Receptions (2 total)	Waterloo, ON	16-Jun-12	3069
Reunions – 50th (Class of 1962)	Waterloo, ON	28- 30 Sept-12	62
Reunions (1967, 1972, 1977, 1982, 1987, 1992, 1997, 2002 & 2007)	Waterloo, ON	28- 30 Sept-12	624
Engineering Class of 2012-Post Convocation Reception	Waterloo, ON	20-Oct-12	669
Waterloo Engineering Vodka Tasting Event	Toronto, ON	30-Nov-12	65

*attendance includes alumni and guests

8. Dean's Advisory Council Members

Name	Title
Paul Spafford (Chair)	Vice Chairman and Managing Director, CIBC World Markets Inc.
Art Church (Vice Chair)	President & CEO, Mancor Industries
John Baker	President & CEO, Desire2Learn
Doug Beynon	President & CEO, Beynon Enterprises
Thomas Brzustowski	Chair of the Board, Institute for Quantum Computing
Savvas Chamberlain	CEO & Chairman, EXEL Research Inc
Erin Chapple	Group Program Manager, Microsoft Corporation
Rod Coutts	Chairman, Navcast Inc.
Murray Gamble	President, The C3 Group
Adrian Hartog	CEO, MySpark Technologies
Tom Jenkins	Executive Chairman and Chief Strategy Officer, Open Text Corporation
Jacques Lamarre	Strategic Advisor, Heenan Blaikie, LLP
Patrick Lamarre	Executive Vice President, Kiewit Energy Canada
Bob Magee	President & Chief Executive Officer, The Woodbridge Group
Kevin Murai	CEO and Member of the Board of Directors, Synnex Corporation
Vivienne Ojala	President & CEO, Brock Solutions
Mike Panayi	President, Pinnacle Consultants Inc.
John Saabas	President, Pratt & Whitney Canada Corporation
Brigitte Shim	Architect, Shim-Sutcliffe Architects
Ray Tanguay	President, Toyota Motor Manufacturing Canada Inc.
Bill Tatham	CEO, NexJ Systems Inc.
Glenn Turchan	Executive Vice President, Conestoga-Rovers & Associates
Don Walker	Co-Chief Executive Officer, Magna International Inc.
Douglas (Doug) Wright	Founding Dean, Engineering, Former President University of Waterloo

H. Data Notes

Acronyms and Abbreviations

Acad	Academic Unit (department, school or centre)
Admin	Administrative Unit or Administrative Staff
ARCH	Architecture (school or program)
Assoc Prof	Associate Professor
Asst Prof	Assistant Professor
CEE	Civil & Environmental Engineering Department
CHEM, CHE	Chemical Engineering (department or program)
CIHR	Canadian Institutes for Health Research
CIV	Civil Engineering (program)
COMP, CE	Computer Engineering (program)
Conrad	Conrad Business, Entrepreneurship & Technology Centre
CPR	Canadian or Permanent Resident
Def Term	Definite Term
ECE	Electrical & Computer Engineering Department
ELE, EE	Electrical Engineering (program)
Enrol't	Enrolment
ENVIRO, ENV E	Environmental Engineering (program)
FTE	Full-time equivalent
GENE	Undergraduate students not registered in an academic program (e.g. exchange students and students registered in the Qualifying Program for Readmission)
GEO	Geological Engineering (program)
GRS	Graduate Research Studentship
IAP	University of Waterloo Institutional Analysis and Planning Office
Int'l	International
Lect	Lecturer
MECH, M E	Mechanical Engineering (program)
MCTR	Mechatronics Engineering (program)
MGMT	Management Engineering (program)
MME	Mechanical & Mechatronics Engineering Department
MSCI	Management Sciences Department
MTCU	Ministry of Training, Colleges and Universities
NANO, NANTE	Nanotechnology Engineering (program)
NASM	Net assignable square metre
NSERC	Natural Sciences and Engineering Research Council
PR	Permanent Resident
PostDoc	Post-doctoral Fellow
Prof	Professor
Prof Master	Professional Master (i.e. coursework; without a thesis)
Rsch Assoc	Research Associate
Rsch Master	Research Master (i.e. with a thesis)
Rsch Prof	Research Professor
SDE, SY DE	Systems Design Engineering (department or program)
SE	Software Engineering (program)
SSHRC	Social Sciences and Humanities Research Council
TA	Teaching Assistant
Tech	Technical Staff
T/TS	Tenured and tenure-stream faculty
UAE	United Arab Emirates (where Waterloo formerly had a campus, in Dubai)

Notes on Tables

- 1 Key Metrics
Space Holdings excludes Architecture and Conrad
- 2 Key Performance Indicators
Undergraduate Students/Faculty excludes CSTV faculty (included elsewhere in Systems Design) and excludes proportion of students in joint programs with other faculties
Graduate Students/Faculty includes only tenured and tenure-stream faculty

Space Holdings/Student, Sponsored Research Funds/Faculty and Sponsored Research Funds/Budget exclude Architecture and Conrad
Budget/Student is widely considered an acceptable measure of the richness of a unit's educational program and is not intended to represent the amount of money spent directly on each student

3 Institutional Context

Source for each metric is consistent with its measurement described below

4 Provincial and National Context

Source: Engineers Canada enrolment and degrees report (most recent available)

Per Engineers Canada guidelines, excludes Architecture and new programs yet to be accredited

Data Definitions and Sources

A1 Total Regular Faculty

Source: Dean of Engineering Office | As of: May 1

Excludes definite-term, research and visiting professors; excludes faculty members in full-time senior university administrative positions (e.g. president, vice-provost)

Systems Design includes CSTV

A2 Distribution of Regular Faculty by PEng Status

Source: Associate Dean, Co-operative Education & Professional Affairs | As of: May 1

Excludes faculty in Architecture, Conrad and CSTV; ineligible=degree(s) from a discipline ineligible for PEng.

A3 Distribution of Regular Faculty by Age

Source: Dean of Engineering Office | As of: May 1

A4 Total Tenured and Tenure-Stream Faculty

Source: Dean of Engineering Office | As of: May 1

Excludes lecturers and definite-term, research and visiting professors

A5 Distribution of TTS Faculty by PhD School

Source: Dean of Engineering Office | As of: May 1

Excludes faculty who do not hold a PhD

A6 Total Non-Regular Faculty Appointments

Source: Dean of Engineering Office | As of: May 1 (note: 2011 data only is as of November 1)

Count of current appointments (note: a small proportion of individuals might hold multiple appointments)

A7 Selected Major Faculty Awards and Honours

Source: Engineering Communications Office | As of: Dec. 31

A8 FTE Staff

Source: Waterloo Human Resources data extract | As of: May 1

Full-time equivalent filled positions paid from the operating budget

Research institutes include WatCAR, WIN and WISE; in previous years' reports, Graduate, Research and Outreach Offices were included in Dean's Office-admin

Excludes positions recently vacated which were under recruitment/not yet filled on May 1

A9 Distribution of FTE Staff by Age

Source: Dean of Engineering Office | As of: May 1

A10 Dean of Engineering Outstanding Staff Performance Award

Source: Engineering Communications Office | As of: Dec. 31

Includes recipients since award's inception

A11 Faculty:Staff Ratios

Total regular faculty:FTE staff paid from the operating budget

Faculty Total includes staff and faculty in administrative units (e.g. Dean's Office, Machine Shop, Undergraduate Office, etc.); Academic Units Only excludes support units

B1 Total Undergraduate Enrolment (head count)

Source: IAP Student Registration cube | As of: Nov.1

All undergraduates registered in the fall term (in class or on co-op) on MTCU count date

Includes students on official co-op work term; includes all students in programs offered jointly with other faculties (i.e. software and nanotechnology); excludes part-time students; excludes students in GENE

B2 FTE Undergraduate Enrolment

Source: IAP Student Registration cube | As of: March 1

Equivalent student registrations in two academic terms in a year; this counters the impact of our co-op program, due to which a proportion of students will have 2 work terms and 1 academic term in a given year

Annual FTE: (spring + fall + winter registrations, excluding students on co-op)/2

Includes all students in programs offered jointly with other faculties (i.e. software and nanotechnology); excludes part-time students; excludes students in GENE

- B3 Undergraduate Degrees Granted
Source: IAP Degrees Granted cube | As of: Dec. 31
Total engineering undergraduate students graduating in the calendar year
Includes all students in programs offered jointly with other faculties (i.e. software and nanotechnology); count by first major (double-major degrees are counted only once)
- B4 Undergraduate Year One New Admissions
Source: IAP ADR applications, offers and registrations cube | As of: Nov. 1
Total new engineering undergraduates registered in the fall term on MTCU count date
Includes all students in programs offered jointly with other faculties (i.e. software and nanotechnology); Total 1A Enrolment includes continuing students returning to 1A
- B5 Undergraduate Admissions by Grade Range
Source: UW Registrar's Office Annual Reports | As of: Nov. 1
Average based on best final 6 U or M courses; prior to 2011 excludes UAE students
- B6 Undergraduate Students:Faculty Ratio
FTE undergraduate students:regular faculty members
Regular faculty here excludes CSTV faculty (included elsewhere in Systems Design); FTE students here exclude 1/2 of software students and 1/3 of nanotechnology students; mechatronics students are allocated 3/5 to MME, 1/5 to ECE and 1/5 to SDE
- B7 Undergraduate Degrees Granted:Faculty Ratio
Engineering undergraduate degrees granted:regular faculty members
Regular faculty here excludes CSTV faculty (included elsewhere in Systems Design); FTE students here exclude 1/2 of software students and 1/3 of nanotechnology students; mechatronics students are allocated 3/5 to MME, 1/5 to ECE and 1/5 to SDE
- B8 Co-op Employment Statistics
Source: Waterloo Co-operative Education & Career Action Office | As of: Dec 31
Excludes students who advised CECA that they were not seeking employment or who did not participate in the interview process and did not provide information on their status
% international placements is share of "employed" terms outside of Canada
- B9 Co-op earnings
Source: Waterloo Co-operative Education & Career Action Office | As of: December 31
Total student earnings are estimated using average salaries
Does not include wages earned internationally
- B10 Undergraduate Exchange Summary
Source: Engineering Exchange Office | As of: Dec. 31
- C1 Total Graduate Enrolment (head count)
Source: Waterloo Graduate Studies Office term report | As of: Nov.1
All graduate students registered in fall term (full-time or part-time) on MTCU count date
Nanotechnology students are counted in the department in which they are registered ; includes non-degree students (which include diploma and certificate programs)
- C2 FTE Graduate Enrolment
Source: IAP Student Registration cube | As of: May.1
FTE = (SpringFTE+FallFTE+WinterFTE)/3 | Each term's FTE = FT+(PT*0.3)
Nanotechnology students are counted in the department in which they are registered ; non-degree students are excluded
- C3 Graduate Degrees Granted
Source: IAP Degrees Granted cube | As of: Dec. 31
Total engineering graduate students graduating in the calendar year
Nanotechnology students are counted in the department in which they are registered ; count by first major (double-major degrees are counted only once)
- C4 FTE Graduate Student Intake
Source: IAP | As of: Nov.1
Total of FTE (FT+(PT*0.3)) of all new graduate students admits in 3 terms (calendar year)
Nanotechnology students are counted in the department in which they are registered ; non-degree students are excluded ; coursed-based master are included with professional master prior to 2012
- C5 Graduate Students:Faculty Ratio
FTE graduate students:tenured and tenure-stream faculty members
All Students includes non-degree students; Research Students includes PhD+Research Master students only; totals might not add precisely due to rounding
- C6 Graduate Degrees Granted:Faculty Ratio
Engineering graduate degrees granted:TTS faculty members
- C7 Graduate Proportion of Total FTE Enrolment
FTE graduate students/(FTE graduate students+FTE undergraduate students)

- C8 Graduate Financial Support
Source: Waterloo Graduate Studies Office annual report | As of: May 1
- D1 Total Sponsored Research Funding & Awards
Source: Waterloo Office of Research | As of: May 1
Other includes \$3.6 million in joint science/engineering funding to equip the Quantum Nano Centre
- D2 Total Tri-Council Funding & Awards
Source: Waterloo Office of Research | As of: May 1
- D3 NSERC Funding & Awards by type
Source: Waterloo Office of Research | As of: May 1
Discovery includes Accelerator Supplements; Industry includes CRC, CDE, I2I, IRC, Engage, Interact, CHRP
- D4 Provincial Funding & Awards by type
Source: Waterloo Office of Research | As of: May 1
Other includes Ministry, FedDev and Ontario Research Chair funding
- D5 Industry Funding & Awards by source
Source: Waterloo Office of Research | As of: May 1
- D6 Total Sponsored Research Funding:Faculty Ratio
Sponsored research funds:tenured and tenure-stream faculty members
- D7 Total Sponsored Research Awards:Faculty Ratio
Sponsored research awards (total#):tenured and tenure-stream faculty members
- D8 Total Sponsored Research Funding:Budget
Sponsored research funds:permanent recurring budget
- D9 Research Chair Holders
Source: Engineering Research Office & Engineering Dean's Office | As of: May 1
- E1 Women in Engineering Disciplines and Women in Architecture
& Undergraduate year one new admissions excludes continuing students, Nov. 1
E2 All undergraduate students = head count, Nov. 1
Undergraduate degrees granted in the calendar year, Dec. 31
All graduate students = head count, Nov. 1
Graduate degrees granted for the calendar year, Dec. 31
Professors = regular faculty, May 1
- F1 International Students
Undergraduate year one new admissions excludes continuing students, Nov. 1
All undergraduate students = head count, Nov. 1
Undergraduate degrees granted in the calendar year, Dec. 31
Undergraduate Co-op Work Terms = # and % of "employed" terms outside Canada, Dec. 31
All graduate students = head count, Nov. 1
Graduate degrees granted for the calendar year, Dec. 31
Outgoing Exchange Students = Waterloo students on exchange elsewhere, Dec. 31
Incoming Exchange Students = Students studying at Waterloo on exchange, Dec. 31
- G1 Total Alumni
Source: Waterloo Office of Alumni Affairs | As of: Dec. 31
Total of all alumni who have graduated with a degree from Waterloo Engineering
Includes all Architecture, Conrad, and software engineering alumni; includes deceased and honorary alumni;
count by preferred major (each alumnus is counted only once)
- G2 Engineering Alumni Donating to the University of Waterloo in the year
Source: Waterloo Office of Alumni Affairs | As of: Dec. 31
- G3 Engineering Alumni Donating to the University of Waterloo in their lifetime
Source: Waterloo Office of Alumni Affairs | As of: Dec. 31
- G4 Funds Raised for the Faculty of Engineering
Source: Waterloo Office of Development | As of: May 1
Cash Received includes all cash, gifts-in-kind and other gifts received (including payments on pledges
counted in previous years); New pledges includes all pledges, cash, gifts-in-kind and other gifts raised
(including those not paid this year)
- G5 Vision 2010 Campaign Progress to Date
Source: Waterloo Office of Development | As of: May 1
Other priority projects include the Rome Program and Conrad, for which minimal funds have been raised,
and other donations received for projects outside the identified priorities

- G6 Alumni Attending Selected Class Reunions
Source: Engineering Alumni Office | As of: Dec. 31
Includes only departments with an undergraduate program in the given reunion year
- G7 Alumni Events
Source: Engineering Alumni Office | As of: Dec. 31
- G8 Dean's Advisory Council Members
Source: Engineering Advancement Office | As of: Sept. 1