



VISION 2010

THE FIRST YEAR

**First Annual Progress Report
on the Faculty of Engineering's Strategic Plan**

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Waterloo

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I EXECUTIVE SUMMARY

From 2004 to 2006, Waterloo Engineering engaged in a thorough and comprehensive planning process. The result was a strategic plan for the Faculty of Engineering entitled *Vision 2010: A Blueprint for Excellence in Engineering Education and Research*. Published in May 2006, it presents a set of goals and strategies aimed at achieving our aspiration to be widely recognized as Canada's premiere engineering school and counted among the leading engineering schools in North America by the year 2010.

As part of our plan, we envisioned an annual assessment of the status of Waterloo Engineering and a report on our progress implementing the Vision 2010 plan. The annual review process would provide an opportunity for individual units to critically examine their plans and propose changes in direction if such changes were needed. This is the first of these annual plan updates.

Vision 2010 calls for a staged expansion of the faculty and staff complements in order to support our new undergraduate programs and the large expansion of our graduate and research programs, as well as to improve quality by reducing student-to-faculty ratios and enhancing staff support for teaching and research.

During 2006, we made considerable progress in faculty hiring and modest progress in staff hiring. Our full-time equivalent (FTE) faculty complement increased from 215.5 on October 1, 2005 to 230 on October 1, 2006. Since the official count date, a large number of new faculty members have accepted positions. We expect our faculty count next October to reach approximately 245, including 35 women (14.3 per cent). We have dedicated a staff member to supporting relocation and integration of new faculty, as well as to supporting our enhanced women-in-engineering initiatives.

The Vision 2010 plan calls for stabilizing undergraduate student enrolment except for an increase in international enrolment and growth due to the phasing in of our new programs. As of November 1, 2006, 5341 undergraduate students were enrolled in Waterloo Engineering, a 4.7 per cent increase over a year earlier. About 19 per cent of these students were female and 4 per cent were international. The increase in the number of international students follows the plan: our target is 8 per cent of the total undergraduate enrolment.

A major goal of the Vision 2010 plan is to increase graduate student enrolment and make significant improvements to the graduate program. As of November 1, 2006, 1224 graduate students were enrolled in Waterloo Engineering, an increase of 109 students over the enrolment of a year earlier. Despite this healthy increase, we fell short of our target. All departments except electrical and computer engineering contributed to this shortfall.

We have put in place strategies and programs that will, we believe, help us meet our targets in 2007. This is essential if we are to benefit from the operating and capital funding provided by the Government of Ontario. We also put in place a number of strategies outlined in Vision 2010 to improve graduate studies, including increasing the number of courses offered and establishing student reviews of graduate courses.

The past year saw considerable progress on the Vision 2010 goal of increasing the intensity and impact of the research undertaken in Waterloo Engineering. Our total external research funding increased from about \$28 million in 2004/05 to approximately \$32 million in 2005/06, an increase of 15.5 per cent. Based on preliminary data, we expect funding in 2006/07 to exceed the Vision 2010 target of \$38 million.

We have been focusing our energies on the following strategic research areas that transcend departmental and in many case faculty boundaries: energy, nanotechnology, automotive, wireless and water. It is our plan to form centres/institutes to foster the development of each of these areas.

In recognition of the central role co-operative education plays in Waterloo Engineering, we recently established the new portfolio: Associate Dean, Co-Operative Education and Professional Affairs. The overall co-op employment rate for Waterloo Engineering students in 2006 was 97.8 per cent, an excellent result in light of the record number seeking employment (6158).

Our Vision 2010 plan recognizes that a major limitation on Waterloo Engineering's ability to achieve its goal of becoming one of the top engineering schools in North America is the shortage of good quality space. To address this problem, we have undertaken a major space planning exercise led by an experienced external consultant. A detailed space study revealed that to implement the Vision 2010 plan, we need to increase our space holdings by about 50 per cent, from the 38,000 net assignable square metres (nasms) we currently occupy to approximately 60,000 nasms. Toward that end, a space plan was formulated consisting of both short-term projects and a longer-term (to 2012) plan. These are all in addition to the Quantum-Nano Centre which has been in design for more than a year. The long-term plan has three phases, with an estimated total cost of about \$150 million. We have received approval to proceed with the Phase I building and design is currently underway.

To support the Vision 2010 plan, preparation for launching an ambitious fundraising campaign has begun under the leadership of our new Director of Development and Alumni Affairs. The goal of the Vision 2010 Campaign is to raise \$120 million, half to support the building program and the other half to support the creation of endowed chairs and graduate fellowships. The success of the campaign will be key to our ability to fully implement our Vision 2010 plan.

To maintain and enhance our industry connections and to receive valuable external input and perspectives on our continually evolving plans, we have established the Dean's Advisory Council. With a membership of two dozen prominent leaders drawn mostly from industry, the council met for the first time on June 1, 2007. Among other things, council members will serve as Waterloo Engineering ambassadors and will assist us with the Vision 2010 fundraising campaign.

None of the progress outlined in this report could have been accomplished without the full participation of Waterloo Engineering's associate deans, chairs and directors. Their engagement in the planning exercise is key to achieving our aspirations. In the year ahead, we will continue to work on all fronts to make further progress on each of our Vision 2010 goals. However, we will pay special attention to the seven high priority areas listed in Section III of this report.

II FIRST ANNUAL PROGRESS REPORT

From 2004 to 2006, Waterloo Engineering engaged in a thorough and comprehensive planning process. Each of the faculty's academic and administrative units developed a self study and a draft plan. The plans were then subjected to the scrutiny of external reviewers and were revised to take account of the reviewers' input. The faculty's overall plan was also critiqued by three external reviewers. The final document, *Vision 2010: A Blueprint for Excellence in Engineering Education and Research*, was published in May 2006. It presents a strategic plan for Waterloo Engineering for the period 2005/06 to 2009/10.

Since the publication of Vision 2010, the University of Waterloo has developed its Sixth Decade Plan. Although developed separately, the goals of the Vision 2010 plan are entirely consistent with the UW's aspirations as expressed in the Sixth Decade Plan.

The Vision 2010 Strategic Plan for Waterloo Engineering represents a commitment to improving quality. It presents a set of goals and strategies aimed at achieving the faculty's aspiration of becoming widely recognized as Canada's premier engineering school and counted among the leading engineering schools in North America.

The Vision 2010 plan envisioned a process of annual assessment of the status of Waterloo Engineering and a report on the progress in implementing its plans. It was also envisioned that this annual review process would provide an opportunity for the individual units to critically examine their plans and propose changes in direction if such changes were desired. This is the first of these annual plan updates. The report to follow attempts to provide a view of Waterloo Engineering in the spring of 2007. The commentaries in the following sections are supported by the data presented in the Appendices. As well, each of the faculty's eight academic units has prepared a plan update document containing more detailed information about the status and the plans of the unit.

A. FACULTY AND STAFF

At the core of Waterloo Engineering's plan for 2010 is a commitment to investing in people. It envisioned a staged expansion of the faculty and staff complements in order to support our new undergraduate programs and the large expansion of our graduate and research programs, as well as to improve quality by reducing student-to-faculty ratios and enhancing staff support for teaching and research. During 2006/07, we have made considerable progress in faculty hiring and modest progress in staff hiring.

The faculty FTE complement has increased from 215.5 on October 1, 2005 to 230 on October 1, 2006. The increase of 14.5 includes 1.5 FTE faculty in the Centre for Business, Entrepreneurship and Technology (CBET) which joined the Faculty of Engineering in May 2006. The net increase in faculty of 13 came as a result of hiring 17 new professors and losing four (two retirements and two resignations). Appendix A provides the breakdown of those complement changes among the eight academic units as well as a listing of the new faculty and those who left.

Since the official count date (October 1, 2006) 22 prospective faculty members have accepted offers of appointment in Waterloo Engineering. Some of these new colleagues have already joined and the rest are scheduled to join over the next year. We also know of two retirements and one resignation that have already taken place and of another resignation that is due next spring. Taking these known changes into account we estimate that the faculty complement next October will stand at about 245. Of this total, 35 or 14.3 per cent are women; a substantial increase over a period of five years. The increase in the number of women faculty has been particularly helped this year by the efforts of the School of Architecture (3) and the Department of Systems Design Engineering (2, both of whom are also winners of NSERC Faculty Awards).

Although faculty hiring is lagging somewhat behind the schedule in the plan, this is not entirely bad. First, it is absolutely imperative to hire the best even though this takes time and effort. Second, we are suffering from a severe shortage of space, a problem we are working hard to solve but whose solution will take some time. Third, some of the planned positions were to be funded from graduate growth funds. At this time, we remain optimistic that we will be able to realize our graduate growth plans. However, it is likely that a good part of this funding will at least for a short period be invested in the start-up of new MEng programs and to support new graduate students. Over time, student support funds will become available from public and private sources.

To support relocation and orientation programs and services for new faculty and to support our enhanced women in engineering initiatives, we have established a new office with a full-time dedicated staff member, Sabine Kawalec. Also, the departments have put in place informal mentorship programs to help with the integration of our new colleagues.

The data in Appendix A shows that our new faculty members have received their PhD degrees from geographically diverse schools and thus bring a wide range of backgrounds and perspectives. The data also shows that despite an increase in undergraduate enrolment of about 4.5 per cent, the student-to-faculty ratio has shown a modest decrease, from 17.6 in 2005 to 16.7 in 2006.

In order to enable faculty members to devote sufficient time to research and graduate student supervision, one of the strategies of the Vision 2010 plan is to reduce the teaching load of regular faculty members to about three courses per year. Most departments have made progress in this direction. Another recommendation of the plan is to establish a faculty-wide committee to help with nominating senior faculty members for major national awards. Such a committee has been established and is chaired by the Dean. The committee's work complements the work that must go on in each department to nominate colleagues for major internal and external awards. The departmental reports provide information on awards and honours. Also, a list of major awards and honours is provided in Appendix A.

Turning now to the staff, we note that there has been a modest increase in complement. However, as in the case with faculty, there have been additional staff hires that are not reflected in the number reported in Appendix A. Nevertheless, it is clear that our staff hiring is lagging behind the schedule in the plan, an issue that we need to address in the coming year.

One of the major developments in the past year has been the establishment of the Dean's Staff Advisory Committee (DSAC), as recommended by the Staff Issues Task Force which was part of the Vision 2010 planning process. The committee meets monthly and has been engaged with issues of interest to staff with the goal of improving the work environment within the faculty and its departments.

Another task force recommendation dealt with staff representation on the Engineering Faculty Council (EFC) and on its committees as appropriate. I am pleased to report that this recommendation has been implemented and the staff is now represented on EFC and a number of its committees.

During the year, a relatively large number of staff reclassifications have been undertaken and successfully implemented. As well, two units, Engineering Computing, and Electrical and Computer Engineering, have led the way by proposing a system of "career paths" for technical staff. The year has also seen increased participation of staff in training and professional development programs.

B. UNDERGRADUATE STUDIES

As of November 1, 2006, 5341 undergraduate students – including students on official co-op work terms – were enrolled in Waterloo Engineering. This represents a 4.7 per cent increase over the enrolment figure a year earlier. Just over 19 per cent of these students were female (excluding architecture students, 17 per cent were female) and 4 per cent were international students. The percentage of female students is down one point from the previous year, reflecting the flow-through effect of the decline in the proportion of entering female students observed in 2003 and 2004. Although the entrance numbers have been improving (16.7 per cent in 2006 compared to 15.0 per cent in 2004) the improvement has been modest and slow and thus it will take a number of years to return to the 20 to 25 per cent range reached a few years ago.

The increase in the number of international students follows the plan, with the target being 8 per cent of the total undergraduate enrolment.

The Vision 2010 plan calls for stabilizing the undergraduate student enrolment except for the increase in international student enrolment and the growth due to the phasing in of the new programs in Mechatronics Engineering (which will reach steady state in 2007/08) and Nanotechnology Engineering (which will reach steady state in 2009/10), and the establishment of the new program in Management Engineering (which will enrol its first cohort in September 2007).

Waterloo Engineering enrolled a record number of first-year students in September 2006: a total of 1388, of whom 98 (or 7 per cent) were international. As the data in Appendix B indicates, first-year enrolment was about 8 per cent higher than target, with all programs except Systems Design Engineering exceeding their targets. This happened despite the strenuous efforts of our Director of Admissions Professor George Davidson to meet our targets, and reflects the very high regard in which Waterloo Engineering's undergraduate programs are held.

For 2007 admissions, Waterloo Engineering has seen about a 17 per cent growth in applicants with nearly 4 of every 10 Ontario high school graduates who elected to study engineering making Waterloo their first choice. At this time (June 3) we have just received the confirmations from those who accepted our offer of admission. Preliminary data shows that a total of 1465 have accepted admission, a figure that is about 9 per cent above target. Of special note: the target for Management Engineering (60) has been considerably exceeded (97), as has the target for international students (157 confirmations versus a target of 94).

In the spring and fall convocation of 2006, Waterloo Engineering awarded 810 bachelor degrees (including BAsC, BArch and BAS). This number is a bit lower than the number of degrees granted in 2005, reflecting the deliberate decrease in enrolment in 2001. A very notable development in 2006 was the graduation of the first class of Software Engineers. Finally, we note that 24 per cent of the 2006 graduates were women.

It is believed that the current suite of scholarships and financial aid offered to entering undergraduate students is quite attractive. Over the past few years, we increased Waterloo Engineering's scholarship and bursary funds through private fundraising. As well, the University of Waterloo introduced scholarship funding for all students with entering averages of 85 per cent or greater (in three different levels). As a result, the vast majority of our students receive an entrance scholarship.

Although all indications are that we continue to attract and enrol excellent students, in the last couple of years there has been an alarmingly high (in relative terms) failure rate in the first year. We are about to set up a task force under the leadership of the Director of First Year Studies to investigate this matter.

The Vision 2010 Plan recognizes the great significance of the undergraduate program to Waterloo Engineering, and most appropriately calls for us above anything else to continue to nurture the undergraduate program. Toward that end, all departments have either completed or are currently engaged in a thorough review of the curriculum of the undergraduate programs with which they are associated. We also continue to explore ways to increase the commonality among the first-year curricula of our 12 undergraduate engineering programs. The objective of this exercise is to make it easier for students to change programs after first year and to simplify the delivery and administration of the first-year program.

The Nanotechnology Engineering program continues to attract outstanding students. Not surprisingly, however, its curriculum required some adjustment and fine tuning. This exercise has begun under the leadership of the program director.

One of the major initiatives undertaken by the Faculty of Engineering in recent years has been the development of the new Professional Development for Engineering (PDEng) program. This very ambitious and innovative initiative has been well received by employers of our co-op students and graduates. Nevertheless, the program, which is unique both in content and mode of delivery, has had some growing pains. The program will deliver its fifth and final course this fall and this will provide us with an opportunity to undertake a comprehensive review of the

program. I am enormously grateful to the director of the program, Professor Carolyn MacGregor, who has worked extremely hard to initiate and develop this innovative program that will ensure Waterloo Engineering remains at the cutting edge of engineering education.

The defining feature of Waterloo Engineering is co-operative education. We report on co-op in Section E of this report.

A full report from the Associate Dean, Undergraduate Studies is available on the web at www.engineering.uwaterloo.ca/Vision2010.

C. GRADUATE STUDIES

A major goal of the Vision 2010 plan is to increase graduate enrolment and make significant improvements to the graduate program. In short, we aim to elevate the graduate program to the same level of excellence as the undergraduate program. Only then will Waterloo Engineering be recognized as among the top schools of engineering in North America.

Our graduate program is already large and of very good quality. Indeed, the enrolment in Waterloo Engineering's graduate program currently comprises about 40 per cent of UW's total graduate enrolment. In the past five years, three of our graduates have been awarded the NSERC Doctoral Prize, the highest national award for doctoral research.

As of November 1, 2006, 1224 graduate students were enrolled in Waterloo Engineering. This represents an increase of 109 students over the enrolment a year earlier. However, during this year, CBET joined the Faculty of Engineering. Thus, for the purpose of a fair comparison, the 33 students enrolled in the MBET program should be subtracted from the 2006 figure, resulting in a net increase over 2005 of 76 students or 6.8 per cent. Of the 1224, 510 were enrolled in PhD programs, 440 in research master's, 258 in course work master's, and 16 in non-degree programs. Note that this year, the "cost-recovery" MOT and Power MEng programs have been reported to the government for the purpose of BIU funding, and thus we no longer have the category of "cost-recovery" programs.

In terms of full-time equivalent (FTE) students, enrolment increased from 952.4 in 2005 to 1030.9 in 2006 (including 33 in MBET). Without the MBET, our target was an overall FTE enrolment of 1080.8. Thus we are about 83 below target. As the data in Appendix C indicates, all departments except Electrical and Computer Engineering contributed to this shortfall.

Our Canadian and Permanent Resident (CPR) enrolment increased from 653.6 to 714.4 or by 60.8 FTE of which 28 are in the MBET program. Thus, the net increase is only 32.8 FTE, considerably below the target of 82.1 FTE.

International enrolment increased from 298.8 to 316.5, that is, by 17.7 FTE of whom five were in the MBET program, for a net increase of 12.7 FTE. Here the target was 46.3 FTE.

Although we did not meet our enrolment targets for this year, we put in place strategies and programs that will, we believe, help us meet our targets in 2007. This is extremely important if we are to benefit from the enrolment growth funding, both capital and operating, from the Ontario Government. All departments are working closely with the Engineering Graduate Studies Office and with the faculty's communications team to ensure that enrolment targets for Canadian and Permanent Residents (CPR) students, which are the ones eligible for Ontario funding, are met. The new MEng programs with subspecialty certificates that ECE, MME and CEE have initiated should prove attractive to both full and part-time students. As well, the efforts spearheaded by the departments in collaboration with the faculty's communications team to promote and advertise these and our other graduate programs should help raise Waterloo Engineering's profile as a destination for graduate work. As an incentive to faculty members to increase the number of CPR students they supervise, we introduced the Dean's Graduate Awards. Judging from the number of faculty members who have applied for and received these awards, the program appears to have been effective.

We fully recognize that major improvements to the graduate application process are required and are working on streamlining and tracking graduate applications. We are currently working with the university's GSO and expect that a great deal more will be done to simplify and automate the admissions process in the coming months.

As of May 23, we have admitted a total of 256 FTE new CPR students for enrolment in 2007. At present, 450 applications remain under consideration. Our goal is 494 new admits, an increase of 214 from the 280 total FTE CPR new admits in 2006. The Associate Dean of Graduate Studies and International Agreements is monitoring and tracking these numbers on a weekly basis.

Increasing enrolment in our graduate programs is only one aspect of our efforts to enhance the graduate program and raise it to a level commensurate with our goal of becoming one of the top engineering schools in North America. The Vision 2010 plan includes a full set of strategies to improve graduate studies, including increasing the number and variety of graduate courses that departments offer. Almost all departments have made progress towards this goal. Another plan recommendation was to establish student reviews of graduate courses. I am pleased that this recommendation has been implemented.

Of equal importance is increasing the number of research seminars given by both internal and external speakers which graduate students are encouraged or even required to attend. Here again some progress has been made and more is expected.

A measure of our productivity in graduate studies is the average number of research graduate students supervised by regular (i.e. tenure/tenure-stream) faculty members. In 2006 this number was an average of 4.1 across the faculty, a slight increase from 4.0 in 2005. The departmental averages vary from a low of 2.7 in Management Sciences to a high of 4.9 in ECE. We believe that an average of 5 is reasonable.

During 2006, 372 graduate degrees were awarded by Waterloo Engineering. Just under a quarter of our advanced degree graduates were women. The corresponding numbers from 2005 were 290 and 25.2 per cent. Finally, we note that in 2006 we awarded 62 doctorates.

More information on graduate studies can be found in a presentation made by the Associate Dean, Graduate Studies and International Agreements to Engineering Faculty Assembly (EFA) in June 2007. This presentation is available online at www.engineering.uwaterloo.ca/Vision2010.

D. RESEARCH

The past year saw considerable progress on the Vision 2010 goal of increasing the intensity and impact of the research undertaken in Waterloo Engineering. The data in Appendix D indicates that our total research funding increased from about \$28 million in 2004/05 to approximately \$32.3 million in 2005/06, an increase of 15.5 per cent. Based on preliminary data, we expect our external funding in 2006/07 to exceed the Vision 2010 target of \$38 million.

The success in increasing research funding has been at least in part due to the leadership and support provided by the Associate Dean, Research and External Partnerships and his office. This recently established position was held by Professor Tony Vannelli until the end of 2006. Tony did a first-rate job in establishing this portfolio and putting in place an array of services to encourage and assist faculty members in applying for research grants and contracts. This work was continued and expanded by Tony's successor Professor Mike Worswick who assumed the position of associate dean on January 1, 2007.

Of special note is the work of Professor Beth Weckman in assisting faculty members, especially new faculty members, with their applications for NSERC Discovery grants. Indeed, our excellent relative performance in this round of applications is due at least in part to this service.

The establishment of the Office of Research and External Partnerships has changed our approach to applying for major research infrastructure and operating grants, especially those that involve teams of researchers spanning a number of departments, faculties and indeed universities. Great success in this area has been achieved and is evident in the recently announced results of CFI, ORF-RI, ORF-RE, and NSERC Strategic grant competitions.

The tremendous leadership of Mike Worswick has been amply demonstrated over the weeks leading up to the submission on May 31 of six major multi-university research proposals to the Ontario Research Fund, Research Excellence competition. The researchers and the principal investigators were instrumental in formulating the research plans. An enormous amount of effort went into forming strategic research alliances, formulating exciting and compelling proposals, and writing and producing the final applications. The leadership of the Associate Dean of Research and External Partnerships and the hard work of the office's full and part-time staff were key to the initiation and completion of this major task.

Although individual faculty members in Waterloo Engineering are free to pursue whatever research areas they wish, the faculty has been encouraging and supporting a number of strategic research thrusts that transcend departmental, and in many cases, faculty boundaries. These strategic areas are energy, nanotechnology, automotive, wireless and water, with biotechnology/health engineering in development. It is our plan to form centres/institutes to foster the development of each of our thrust areas.

Measuring the impact of university research is not a simple task, and in our case remains a work in progress. Our goal is to become more systematic in measuring the results of our research, whether it is papers published or technology transferred. The departmental reports include some data in this direction. We have also commissioned a detailed bibliometric study with the goal of benchmarking our published research output, including research citations, at the departmental level versus that of peer departments in North America. We hope to be able to provide more concrete results on research performance in subsequent annual reports.

A great deal more on Waterloo Engineering's efforts to enhance research intensity and impact can be found in the June 2007 presentation made by the Associate Dean, Research and External Partnerships to Engineering Faculty Assembly. This presentation is available online at www.engineering.uwaterloo.ca/Vision2010.

E. CO-OPERATIVE EDUCATION AND PROFESSIONAL AFFAIRS

In recognition of the central role which co-operative education plays in Waterloo Engineering, we have recently established a new portfolio, the Associate Dean for Co-Operative Education and Professional Affairs. The founding associate dean is Professor Dwight Aplevich. It is intended that over time, the Faculty of Engineering will have closer relations with the Department of Co-Operative Education and Career Services (CECS). Work towards this goal has already begun.

The overall co-op employment rate for engineering students in 2006 stood at 97.8 per cent, an excellent result in light of the fact that a record number of students (6158) were seeking employment. Data for each of our programs is presented in Appendix B.

During the past year, the Software Engineering program received accreditation from the Canadian Engineering Accreditation Board (CEAB), and received the accreditation visit from the Canadian Information Processing Society (CIPS). We expect to learn the results of the CIPS accreditation shortly. The CEAB accreditation is for two years, thus allowing the program accreditation to be synchronized with those for the other engineering programs.

A great deal of the associate dean's time during the past year has been occupied with the preparation for the upcoming CEAB accreditation visit. The visit is scheduled to take place in early November 2007. Many readers of this report will be familiar with the rigors of this exercise; for a faculty of our size this indeed is a mammoth effort!

A major issue for most engineering schools in CEAB accreditation is the proportion of faculty members who are licensed professional engineers. Under the leadership of the associate dean and the department chairs, we have been making efforts to encourage faculty members who are eligible to apply to become licensed. I would like to take this opportunity to remind colleagues of the importance of this qualification for the success of our program accreditation.

The Architecture program accreditation visit took place in November 2005 and the program received accreditation notification in January 2006 of a full six-year term granted by Canadian Architectural Certification Board.

Additional information can be found in the presentation of the Associate Dean, Co-operative Education and Professional Affairs to EFA in June 2007, available online at www.engineering.uwaterloo.ca/Vision2010.

F. SPACE

The Vision 2010 plan recognizes that a major limitation on Waterloo Engineering's ability to achieve its goal of becoming one of the top engineering schools in North America is the shortage of good quality space. To alleviate this problem, we have undertaken a major space planning exercise and engaged the services of an experienced external consultant to lead the development of the plan. Ron Venter, formerly Professor of Mechanical Engineering and Vice-Provost for Space and Facilities Planning at the University of Toronto, has been serving in this capacity over the past year. He has been assisted by Susan Gooding, Manager of Operations for the Office of the Dean.

Ron began his work with an analysis of our current space holdings as well as a determination of our current space needs according to both the Council of Ontario Universities (COU) space standard and the University of Waterloo space formula. The analysis indicates that in 2006 we occupied about 38,000 nasms (net assignable square metres). To properly accommodate our current activities, we need about 42,000 nasms. Projecting forward to 2010, the space analysis determined that to implement the Vision 2010 plan we need to expand our space holdings to about 60,000 nasms (i.e. by approximately 50 per cent).

With the space analysis in hand, and with each department's space needs formulated, we proceeded to develop an integrated space plan to address the shortfall and to achieve a number of other important strategic goals. The details of the plan are outlined in a presentation made by Ron Venter to the Dean's Advisory Council (DAC) in June 2006, available online at www.engineering.uwaterloo.ca/Vision2010. In the remainder of this section we provide a very brief description of the space plan.

In the short term we have a number of projects in place that will help to somewhat alleviate the considerable constraint we are currently facing. Specifically:

- The Centre for Advanced Photovoltaic Devices and Systems building is nearing completion. In addition to the photovoltaic laboratories on the first floor, the building will have two additional floors. These floors will provide 1300 nasms that will accommodate some of our work in energy in the departments of Mechanical and Mechatronics Engineering, and Electrical and Computer Engineering.

- A second story addition to the multimedia lab in Carl Pollock Hall will provide 320 nasms of new space for the Department of Management Sciences to accommodate the increased activities as a result of the new Management Engineering undergraduate program.
- Plans are being formulated to improve the air quality and upgrade the space in the DWE building.

In the longer term, that is, between now and January 2012, we will be building a new Quantum-Nano Centre (QNC) and plan to construct 3 additional new buildings.

The QNC is currently in final design. This 225,000 gross square foot (approximately 11,000 nasms) state-of-the-art facility will house both the Institute for Quantum Computing (IQC) and the Nano Institute, with the two units sharing the building equally as well as sharing major experimental facilities. Although Waterloo Engineering is a small participant in IQC, we constitute about two thirds of the nano effort. The QNC should be ready for occupancy by September 2010.

As an interim staging facility, the university will be constructing a simple but efficient structure on the North Campus. This facility will provide temporary accommodations for the IQC and the nano institute among others. It should also serve as a staging facility on an on-going basis.

The main Vision 2010 space plan comprises 3 phases. We currently have approval to proceed with Phase 1.

The Phase 1 building is currently being designed and the plan is to begin construction in January 2008 and to have the building ready for occupancy in January 2010. Situated on Parking Lot B across the railway tracks from E3, it will have an elevated pedestrian link to E3. The building will comprise five floors with the ground floor having double height, providing a total of 7,900 nasms. The ground floor (plus a mezzanine) will house the Student Design Centre (1,900 nasms), the Design Chair, and the Anechoic Chamber (for wireless work, recently funded by CFI and ORF-RI). The upper floors will provide space for ECE, MME and SDE.

The Phase 2 building will be inside the ring road close to the DWE building. It will serve as headquarters for the faculty as well as providing space for the Department of Chemical Engineering, with a total of 6,300 nasms.

The Phase 3 building will be on Parking Lot B, adjacent and connected to the Phase 1 building. It will allow for the departments in the Phase 1 building to expand horizontally. It is planned to provide 7500 nasms.

The departments acquiring new space will vacate some space in the current buildings. This space will be renovated and assigned to the Department of Civil and Environmental Engineering. All three buildings will provide space for both teaching and research. They will be designed with the undergraduate students in mind and will aim to provide inviting study and social space.

The space program will cost about \$150 million. The funding will come from three sources in approximately equal proportion: private fundraising (see the next section of this report), university funding, and the Ontario Government funding for graduate growth.

Although the space plan is ambitious both in scale and in timing, adequate space is essential for our quest for excellence in research and teaching.

G. ADVANCEMENT AND PLANNING

Our advancement work has three components: communications, development and alumni affairs. Communications is coupled with planning and is under the leadership of the Director, Planning and Communications. Since November 2006, the director, Martha Foulds, has been on maternity leave. She has been replaced by a veteran communications professional and former UW staff member Linda Kenyon.

The planning and communications portfolio saw a lot of activity this year, especially on the communications front. Last fall, under Martha's able direction, a series of national newspaper advertisements were produced to promote Vision 2010 and raise Waterloo Engineering's profile. Other projects ranged from producing a stunning annual report to working with the departments to produce attractive communication pieces to promote graduate studies in general and the new MEng programs in particular. As well, Linda Kenyon has been collaborating with the centre to ensure that the faculty's component of the national advertising campaign promoting UW at 50 serves our interests well.

Our planning work this year consisted mostly of graduate growth planning as well as gathering the data to support the first annual Vision 2010 plan update. The Director of Planning and Communications also continued to play a collaborative role with the university's Office of Institutional Analysis and Planning (IAP) in supporting the university-wide work on performance indicators. Specifically, we are currently experimenting with a new software tool designed to track goal achievement in plans, with the Vision 2010 plan being used as the pilot project.

The communications team has also been supporting the work of the development group and in particular the development of material to support the recently created Dean's Advisory Council (DAC).

This year also saw the appointment of industry and external liaison directors in our two largest departments (ECE and MME). We have high expectations that these new positions, working closely with the Associate Dean, Research and External Partnerships, will enhance our work with industry and governments, and we see this already happening in ECE which was the first department to hire a director of industry relations. If this new model proves effective we will consider expanding it to other departments. Finally, we note that the position of Business Development Officer in Nanotechnology Engineering has been recently filled.

An area that has undergone considerable reorganization and personnel change this year has been development and alumni affairs. Most significantly we have appointed an outstanding and experienced leader, Ibrahim Inayatali, as Director of Development and Alumni Affairs. Ibrahim joined us near the end of the 2006 calendar year, taking over from Judy Hopps who served us very well as interim director during a good part of 2006. Ibrahim moved quickly to reorganize his development team and to plan for the Vision 2010 Campaign. A good part of his planning has been devoted to the establishment of the Dean's Advisory Council, described more fully in the next section of this report.

The Vision 2010 Campaign has the goal of raising \$120 million of private funding to support the Vision 2010 plan. About half of the goal is for capital funds to support the space plan described in the previous section. It is fair to say that without this funding our space plan cannot be implemented in its entirety, which will severely hamper our ability to realize the ambitious goals of Vision 2010. In short, we are not embarking on this campaign to raise funds for good and interesting projects, rather, we are attempting to fund the essential infrastructure needed to implement the plan we have worked so hard to formulate.

The other half of our \$120 million goal is needed to provide scholarship and fellowship support for some of the new graduate students in our graduate growth plan, as well as to establish 20 endowed chairs in priority research areas across our departments. Again, both graduate student support and the endowed chairs are essential elements in attracting top graduate students and hiring and retaining top faculty from around the world.

Planning for the campaign has begun in earnest and we have received approval to proceed from the Chair of the UW Board of Governors and Chair of Campaign Waterloo, Mr. Robert Harding, and from President David Johnston and Provost Amit Chakma. Unlike other fundraising campaigns, this one is intimately tied to, and driven by, the academic plan of the faculty. To learn more about the Vision 2010 Campaign, please refer to Ibrahim Inayatali's presentation to DAC, available online at www.engineering.uwaterloo.ca/Vision2010.

Waterloo Engineering has always enjoyed an excellent relationship with its alumni. It is essential therefore to maintain and nurture our alumni program. The program is ably managed by Gosia Brestovacki who was on maternity leave during 2006 and was replaced by Carol Truemner (now a member of the communications team) who did a terrific job in Gosia's absence. The highlight for this year has been the 50th Anniversary Celebration held at the Royal York Hotel on March 1, 2007. This major event, which attracted over 300, was negatively affected by the worst snow storm of the year. Nevertheless, it turned out to be a very successful event.

H. DEAN'S ADVISORY COUNCIL

Waterloo Engineering prides itself on being an "industry friendly" faculty with many deep connections with industry stretching back to our co-op roots. To maintain and enhance our industry connections and to receive valuable input and external perspectives on our continually evolving plans, we have established the Dean's Advisory Council. With a membership of two dozen prominent leaders drawn mostly from industry but with a strong representation from

academia and government, the council met for the first time on June 1, 2007. By all accounts, this inaugural meeting was a huge success. The five hours of presentations and lively discussion have resulted in some very interesting new ideas to pursue further in the coming weeks and months.

The council plans to meet twice a year. Besides keeping members informed of our activities at a sufficiently high level and receiving their feedback and advice, we will be calling on them to help open doors for the faculty to support our industry, government and philanthropic programs. The full list of DAC members as well as a copy of DAC's mandate are provided in Appendix E.

I. WOMEN IN ENGINEERING

A goal of Vision 2010 is to increase the participation of women at all levels of engineering: undergraduate, graduate and faculty. Although effective strategies for each of these three groups differ, there is a general need for an office that provides the coordination and resources necessary for the success of our initiatives in these areas. It is also important to ensure continuity of effort as membership changes occur in the EFC Women in Engineering Committee and as the Engineering Society Women in Engineering Director changes. I am pleased to report that this office has been established and that Sabine Kawalec has been appointed Co-ordinator of Women in Engineering and New Faculty Support. Sabine devotes 50 per cent of her time to WIE activities and the other half to the synergistic functions of helping new faculty members relocate to Waterloo and supporting mentoring programs.

The WIE office works closely with the WIE committee on various initiatives. We have been fortunate to have had pro-active WIE committees with enthusiastic leadership that has included in recent years professors Susan Tighe, Christine Moresoli, Ladan Tahvildari and Brian Tolson. One of the most successful initiatives has been the Go Eng Girl! event held every October and organized in collaboration with other Ontario engineering school. Guelph Professor Valerie Davidson, holder of the WIE NSERC Chair for the Ontario Region, has provided excellent leadership for this event.

Now to results. After a couple of years of declining enrolment of women, on a proportional basis, in first-year engineering programs both at Waterloo and indeed Canada wide, the trend has been reversed. The data in the appendix shows that the female proportion of the first-year class has been on the rise, but unfortunately slowly. It will be some time until we return to the 20 to 25 per cent figures seen a decade ago. A positive aspect that frequently goes unrecognized and which deserves more study is that the attrition rates of women undergraduate students are lower than those for men. As a result, the female proportion of graduating students usually exceeds the corresponding figure for entering students.

At the graduate level it appears that we have continued to do better than at the undergraduate level, and especially so at the master's level. Here we should note that data that includes architecture indicate higher numbers than achieved by the engineering programs alone because of the tremendous success of architecture in addressing the issue of gender balance.

In terms of women faculty, we have made good progress on increasing the numbers and the overall proportion. As mentioned in Section II A, we anticipate that by the official count date in October 2007 we will have 35 women faculty members out of a total complement of 245, or about 14 per cent. The large faculty hiring program in which we are engaged provides us with a great opportunity to address the gender balance issue in the professoriate. If we do not, we will continue to miss out on the talent of 50 per cent of the population and will deprive ourselves of the valuable perspectives that women bring to our teaching and research. Here we note that most other professions have successfully addressed the gender balance issue; examples include law, medicine and pharmacy.

Hiring women faculty is only part of the process, for once they are here we have to provide a supportive working environment including good policies and practices on significant issues such as maternity (and paternity) leaves.

J. COMPUTING

The faculty is fortunate to have an excellent group of IT professionals who work in Engineering Computing. Under the leadership of Peter Douglas, Associate Dean, Computing, Engineering Computing increased its collaboration with the IT professionals in the various departments and in IST. From my vantage point, it appears that the computing function is functioning well.

On more specific issues, we must continue our effort to use course management software in all of our undergraduate courses. Our students expect it and I believe it increases their awareness of the course syllabus, material and requirements, and of routine matters such as marking schemes.

The Associate Dean, Computing has been undertaking a number of initiatives aimed at reducing unnecessary work on the part of faculty, staff and administration. A very successful example has been the automation of the production of the annual performance evaluation report which every faculty member is required to submit. This initiative is significant not only in terms of time savings. It affords each of us an opportunity to examine the data in the central data bases of the university and correct it, if necessary. The project was done in collaboration with Professor Beth Jewkes and her colleagues in the Department of Management Sciences. The resulting system is very attractive and IST wishes to adapt it for the rest of the university. We are also extending it to include the production of CVs and specialized CVs as required for NSERC applications, OCGS and CEAB reviews.

Another major initiative being undertaken by Peter Douglas in collaboration with the dean, the GSO, and IST concerns redesigning and automating the graduate admissions process. This initiative has been adopted by UW as one of the “Smart Projects” that the university wishes to pursue in the coming year and I have been appointed chair of an executive council task force that will begin its work this summer.

More information on developments in Engineering Computing is presented in Peter’s report to EFA, available online at www.engineering.uwaterloo.ca/Vision2010.

K. ORGANIZATIONAL MATTERS

A significant organizational change took place in 2006: the Centre for Business, Entrepreneurship and Technology (CBET) joined the Faculty of Engineering as our eighth academic unit. Located in the Accelerator Centre on the north campus, CBET offers the relatively new but successful master's program, MBET. This program, which has been enrolling about 30 full-time students, will significantly increase enrolment this year. CBET also offers a wide array of outreach activities aimed at fostering entrepreneurship among our students and faculty and encouraging the development of technology transfer plans. We believe that CBET is a significant asset for Waterloo Engineering, and we are already starting to see collaborative work take place with other engineering departments. CBET is the "brainchild" of Professor Howard Armitage who is currently its executive director. Its daily operations are ably managed by the director, Paul Doherty.

The School of Architecture continues to thrive in its magnificent physical space in Cambridge. Its director, Professor Eric Haldenby continues to work closely with the faculty leadership and with his fellow department chairs to establish collaborations and to more fully integrate the school into Waterloo Engineering.

A number of changes in leadership positions that took place in the past year have already been mentioned in this report. Others of note: Marios Ioannidis has replaced Siva Sivoththaman as Director of the Nanotechnology Engineering program. As founding director, Siva did an outstanding job of launching the program.

Another significant change has been the appointment of Professor Pearl Sullivan as chair of the Department of Mechanical and Mechatronics Engineering, succeeding Professor Gerry Schneider. I believe the department has had a great first year under Pearl's leadership.

L. BUDGET AND FINANCES

As a result of the annual budget cuts (ranging between one and two per cent) our financial situation has become greatly constrained. To cope with budget reductions and in fact at the same time pursue our ambitious Vision 2010 plan, we have decided to participate in most of the university's new initiatives and to work hard to somewhat diversify our revenue sources.

Starting from no international students in the undergraduate program, we now enrol approximately 200 and the number will double, reaching a steady value of about 400 or 8 per cent of total enrolment by 2010. The faculty shares equally with the university the revenue derived from undergraduate international student tuition fees.

Another very significant revenue source for the faculty has been the differential tuition fees (DTF) that our engineering students pay. In fact, were it not for the DTF revenue, the faculty, staff and TA complements would have been much lower than they are today and obviously the quality of our undergraduate program would have been poorer.

In the years beginning with the double cohort period (2003), the Government of Ontario had in place a funding envelope aimed at expanding the number of undergraduate places available in Ontario universities. Waterloo Engineering fulfilled Ontario's expansion policy by creating attractive new and innovative programs (Mechatronics in 2003, Nanotechnology in 2005 and Management in 2007). I believe this has been exactly the right response to the government's policy initiative and this assertion is borne out by the fact that unlike a number of other engineering schools in Ontario, Waterloo Engineering continued to attract the best applicants and with increasing numbers. Unfortunately, the growth in undergraduate enrolment in Ontario has been greater than the government has budgeted for. As a result, enrolment growth is currently funded at discounted rates.

We should also note that enrolment growth funding enabled the faculty to mount the PDEng program without increasing the students' tuition fees.

Currently, the most important revenue sharing initiative in which the faculty is engaged is graduate growth. Here it is important to observe that growing our graduate program has been a policy adopted by both the university and the faculty much before the Ontario Government announced its intention to fund graduate expansion in Ontario as part of its Reaching Higher program. It made a great deal of sense, therefore, to synchronize our growth plans with the government's time frame so that we can benefit from both the government's operating and capital funds. Unfortunately, the government's funding window is very narrow and is scheduled to close by the end of 2007.

Two major revenue-source diversification strategies are the private funding campaign, discussed in Section II G, and our efforts to increase the external funding of our research. We have had early successes in raising private funds and our efforts will accelerate in the coming year. On the research front, we have been able to increase our annual external funding by about a third or \$10 million over the past two years (2004/05 and 2006/07), not counting the major infrastructure grants which have been recently announced. Of course, increased research funding goes to support the research programs for which the funding was awarded and does not help with addressing the shortfalls resulting from budget cuts. The exceptions of course are the faculty's share of the federal indirect cost funding which helps support the research infrastructure, and the faculty's and departments' share of the overhead on industrial research contracts which is an important source of one-time-only (as opposed to continuing) funding of research infrastructure and other research-related initiatives.

We conclude this section by noting that the faculty has been working with the departments on the one hand and with the provost on the other to assemble the university's share of our capital expansion cost. To do this we might have to delay some faculty and staff hiring beyond the schedule in the Vision 2010 plan.

III PRIORITIES FOR 2007

Waterloo Engineering's goals remain unchanged from those set out in the Vision 2010 plan. Also, it should be apparent from the material presented in this report what has been achieved and what needs further work. In the coming year, we will continue working on all fronts to make further progress on each of our goals. Nevertheless, it is useful to present here a list of the highest priority items that we need to concentrate on. The items in the following list are not in priority order.

- In the area of undergraduate studies our three top priorities are commissioning an independent review of the PDEng program, ensuring that the new Management Engineering program is successfully launched, and working to ensure a successful CEAB accreditation visit this fall. Another important item is to continue the process of fine-tuning the Nanotechnology curriculum. Also important is to give serious consideration to the proposal of the McKay-Anjos report to change the sequencing of the co-op work terms.
- In graduate studies, our highest priority is to meet our graduate growth target, obviously without lowering our admission standard. Another important priority is to continue the creative thinking that has already begun in designing MEng programs that are innovative in both content and mode of delivery, including a new version of "co-op MEng."
- In research, our priorities are to establish centres/institutes in the following areas: nanotechnology, energy, wireless and possibly water. Connected to the establishment of a nanotechnology institute is the need to ensure that the CFI Nano Infrastructure grant is efficiently managed. Certainly we will have to continue the strong momentum we have built in encouraging and supporting the application for external research funding.
- We have to continue our efforts to hire the best faculty and staff. In certain areas, however, we might deliberately slow down faculty hiring to save funds for our building program and/or to construct the required space first. A department-by-department hiring plan will be developed by the chairs working with the dean over the summer.
- Space will continue to be a very high priority this year. We have to ensure the timelines for the space plan implementation are adhered to. Equally important is to step up our efforts to assemble the funding required.
- The Dean's Advisory Council is off to an excellent start. We now must ensure that it becomes an effective body and that utilize the precious time and considerable talent of the members wisely and efficiently.
- As mentioned in the report, the Vision 2010 Campaign aims to raise \$120 million. It follows that a very high priority for us this year is to continue the excellent work started on campaign planning with the goal of a public launch early in 2008 at which time we hope to have raised about 40 per cent of the campaign goal.

IV DEPARTMENTAL PROGRESS REPORTS

A. ARCHITECTURE

The School of Architecture hired four faculty members in 2006, increasing the faculty complement from 17 to 19 FTE. Three of the four positions went to women, immediately raising the number female faculty members from 2 to 5. The end result is a rebalancing of the complement in terms of age and gender. This is especially important given that the student body in architecture is majority female.

The graduate program is expanding more slowly than anticipated in the Vision 2010 plan, but it will reach the predicted 2007/08 enrolment of 94 students in the fall of 2007. This will be achieved in part by the recruitment of an increasing number of students who completed pre-professional degrees at other universities.

The school is preparing proposals to launch a PhD program focused on architectural theory and history and a non-professional master's program in design that will attract practitioners who wish to pursue research in the field or those students with non-design backgrounds who wish to pursue the design implications of their previous academic formation.

New elective courses, some taught by adjunct instructors of national profile, have improved the quality and range of options for graduate students. The first graduate studio took place in Rome in January 2007 in conjunction with the school of architecture at Università Roma Tre.

The number of graduate teaching assistantships increased substantially from 31 in 2005 to 90 in 2006. This increases graduate student income, brings the workload in line with the regulations and enhances the delivery of undergraduate courses.

In terms of space and facilities, with the completion of the 81-seat electronic classroom the major elements of the architecture building in Cambridge are complete. The school is proceeding with plans for an addition to the building. In the meantime space will be leased in the building across Melville Street.

Vision 2010 called for a substantial enhancement of the support facilities for digital input and output. The purchase of two plotters, a large format scanner and a laser cutter has provided the students with the capacity to produce professional presentations at a reasonable cost. Most of the equipment is available in a small supply and service facility near the main entrance to the school.

There have been several changes to the undergraduate curriculum. The School of Architecture has introduced new approaches to the teaching of structural design more in keeping with the needs of architects. A slate of complementary electives has been introduced including Italian Language, Printmaking, and Advanced Computer Graphics. The third year Design Studio will experiment with a program of option studios in the fall of 2007.

The undergraduate program experienced severe stress given that the pressure on admissions has reached unprecedented levels. In 2006 there were about 1000 applicants for 72 places. In 2007 the number was 1200. In spring 2006, 104 offers of admission were extended and 90 students accepted, resulting in a first-year class of 88, that is, 24 per cent above target. The quality of the students is very high. The admissions process continues to work very well. The uptake ratio is exceptional. In 2007 fewer offers have been made and the intake has been more carefully controlled. The international target was not reached in 2006, nor, it appears, will it be in 2007. Adjustments have been made to provide more time for international applicants to prepare.

On the creative front, the last year has been extraordinary with Professor Beesley's work published and exhibited internationally, Professor Revington's installation at the new Pearson Airport dedicated, Professor Pignatti's Piazza S. Cosimato dedicated in 2006, the first modern piazza in Rome, and Professor Thun's victory in the Canadian Architect Awards. This is to name but a few.

Professor Beesley was successful in obtaining an SSHRC Creator's Grant. Other initiatives, including a large SSHRC Community University Research Alliance project are ready for submission to fall 2007 competitions.

In international news, security problems in Rome made it necessary to carry out renovations to the Rome Studio. The program continues to be a success, having attracted the support of the Italian Ambassador to Canada. The launch of the graduate studio in the winter and spring terms means architecture is in operation in Italy throughout the year.

The professional program received full six-year accreditation from the Canadian Architectural Certification Board in January 2006. The graduate program received a positive review from OCGS.

Architecture graduates and students won a Fulbright (third year in a row), The Canada Council Prix de Rome for Emerging Practitioners, three Canada/China Scholars Program Awards and the Berkeley Prize for Architectural essay writing.

B. CENTRE FOR BUSINESS, ENTREPRENEURSHIP AND TECHNOLOGY

The CBET team has focused on five important initiatives over the past year; (1) expanding the size of the MBET program (to accommodate approximately 50 students in a double cohort); (2) expanding its executive outreach program, by creating certificates in Strategic and Operational Leadership; (3) setting up a Technology Entrepreneurship and Commercialization Network (TECNet) in partnership with the Xerox Centre for Engineering, Entrepreneurship and Innovation (XCEEi) at McMaster University; (4) broadening the appeal of the MBET program to include those with an interest in media arts and communication and (5) expanding efforts to promote CBET through participation in external business plan competitions, the creation of an internally run competition and international projects. In addition, plans have been put in place to review and improve the MBET curriculum.

The centre continues its record of strong financial management. We have continued to place significant resources into the promotion of CBET and the MBET graduate program. Preliminary recruitment numbers for the fall 2007 MBET intake are on target and significantly higher than last year. The increase in the number of MBET students has necessitated a more formal approach to our admission process and systems have been put in place to better track students through an internally designed database. The centre continues to attract the best students. In the coming year the centre will enroll several professors/professional staff from ITESM for the MBET program.

Overall the centre is in an excellent position for expansion. Future efforts will concentrate on increasing graduate enrollment, entrepreneurship research, and curriculum enhancement and student development.

CBET's growth has been made possible through the passion and commitment of the faculty and staff who work incredible hours to make the CBET vision a reality.

C. CHEMICAL ENGINEERING

A key priority for the Department of Chemical Engineering in the past year has been faculty recruitment. In particular a large amount of effort and emphasis was placed on recruiting for the nanotechnology program. In 2006/07 the plan called for chemical engineering to hire four faculty members, two for the Chemical Engineering program and two for the Nanotechnology Engineering program. It successfully hired one in the area of biochemical engineering and was turned down by two in nanotechnology. Towards the end of the year two senior nanotechnology candidates were identified and interviewed in early 2007. One has accepted an offer and negotiations continue with the second. If successful, the number of positions to be filled in 2007/08 will be one in nanotechnology and two in chemical engineering. Therefore hiring will continue to be a key priority for the department.

The department has made considerable headway in increasing the number of faculty members with professional engineering designations. The new hire is a registered professional engineer and in addition four faculty members have applied for registration and one has been reinstated. This brings the total number of faculty members who are licensed or have applied to 17 out of 28 or about 60 per cent.

In 2006 there were a total of six faculty members (3 regular and 3 retired) who received awards.

The department is ramping down from a historic course load of four courses per year and has achieved over the last two academic years (2005/06, 2006/07) a load of 3.5 courses per year with faculty teaching three courses in one year and four in the second. The target is three courses per year.

In 2006 no major curriculum change was made. Prior to 2006, the department had approved a major overhaul to the chemical engineering curriculum, in particular to the way laboratories are incorporated into the curriculum. New self-contained lab courses are given in each term starting in 2A. In 2006 a substantial effort was invested into the detailed design of the first two

laboratory courses. In addition to the curriculum development related to the laboratory courses, two new experiments were developed.

Graduate student recruitment continues to be a top priority for the department. In an effort to attract more Canadian students, the associate chair and other faculty members participated in a series of graduate studies information sessions in collaboration with the University of Toronto, MacMaster University and the University of Western Ontario. In addition the department has introduced and advertised on its website entrance scholarships for Canadian and Permanent Resident applicants and a stipend for MEng applicants. Towards the end of the year we also increased our efforts to retain qualified CPR applicants and as the results for the winter 2007 term show these have been very successful. A new graduate recruitment poster was also developed and sent to all chemical engineering, chemistry, physics and biology departments in Canada.

During 2006 faculty members supervised a total of 141 graduate students. This amounts to an average of 5.4 students per full-time faculty member. In 2006 approximately 100 graduate students attended conferences with approximately 80 presenting papers at these conferences.

In 2006 the department initiated a review of the graduate curriculum and approved a set of core courses, from which all students must select approximately half of their required courses. Introduction of core courses also provides the department with a simple mechanism for enrolling students with backgrounds in other disciplines including for example physics, chemistry, biology and applied mathematics to pursue graduate studies in chemical engineering.

The research enterprise of the department continues to flourish. In 2006 the total number of ISI-ranked journal publications published by the department was 113. This represents an average number of 4.3 per faculty member.

One of the major challenges identified during the planning process was the low quality of space in the Department of Chemical Engineering. In particular the need to improve the appearance and functionality of existing research space was identified. The department has been actively working on a short-term and long-term solution to this problem. In the long-term the department is committed to participating in the Faculty of Engineering Space Plan and has already committed \$400,000 of departmental funds to the building fund. In the short-term several renovation projects were undertaken to create urgently needed new laboratories, primarily to address the needs of newly hired faculty, as well as a new home classroom for chemical engineering students.

D. CIVIL AND ENVIRONMENTAL ENGINEERING

For the past three years, the Department of Civil and Environmental Engineering has been on a steady growth path and by the fall of 2006 reached its historic faculty complement of 33 FTE in the pre-SERP period.

Year 1 admission targets for Civil, Environmental, and Geological Engineering remain steady, as envisaged in the 2010 Plan. Some increase in the number of undergraduate students relates to a

surge in the popularity of the Civil Engineering program that resulted in an unexpected increase in Year 1 confirmations in the fall of 2006. Still, due to growth in the faculty complement, the overall student faculty ratio continues to decline.

The department completed implementation of a curriculum that features a common first year for Civil, Environmental, and Geological Engineering programs. Developing this curriculum involved a number of compromises. The main benefit is the ability to transfer from one program to another with a simple stream switch. Although there were only a few transfers between programs, so far, the possibility of switching puts entering students at ease with their initial choice of the program.

During this year the department completed a transition to teaching three courses per year. This has been accomplished without the elimination of undergraduate electives while teaching some of them at alternate years. The number of graduate 600/700-level courses remained at a historic average level. Some rigidity in scheduling sabbaticals has been necessary in order to minimize the use of sessional lecturers, not more than 3 to 4 per year. The time freed from in-class instruction is dedicated to graduate supervision and research, thus helping to achieve the Vision 2010 goals to expand our graduate program.

The graduate growth in research programs matched the Vision 2010 targets for 2006/07 almost precisely, within one to two FTE. The department is below the target in MEng enrolment by about seven FTE, mainly due to an unexpected increase in the number of students registered part-time. The spike in part-time registrations is because of an unprecedented civil engineering job market worldwide.

A plan has been developed to re-focus the MEng program on infrastructure engineering starting in the fall of 2007 by introducing specialized graduate courses in this area. The MEng program will also include an optional co-op term. The intent is to admit 50 new MEng students in the fall of 2007.

A minimum set of pre-scheduled graduate courses has been introduced in 2006. Each research group in the department identified a set of graduate courses considered to be a core for the area. These 600-level courses, 14 in total, are repeated annually. On average, the department teaches 18 to 20 600/700-level courses, in addition to a large number of 500-level courses.

The gross research funding has been increasing steadily since 2003 by more than 20 per cent per year on average and the trend has continued this year. The department is well-positioned to take on new challenges in 2007/08, thanks to the commitment of its faculty members and dedicated staff.

E. ELECTRICAL AND COMPUTER ENGINEERING

The Department of Electrical and Computer Engineering has worked tirelessly to implement the vision presented in the 2010 strategic plan.

A major objective was to expand the size and improve the quality of the graduate program. Several important initiatives were created to make this objective a reality. In particular the revamping of the MEng program and the creation of certificates of specialization will prove attractive to practicing engineers who wish to upgrade and update their knowledge. With a clear objective to increase the number of graduate students, many structural changes had to be carried out. These included the streamlining of the admission process and the better tracking of our current students through an internally designed database. A huge effort was also made on recruitment in collaboration with the communication team. The preliminary recruitment numbers for fall 2007 for the MEng program are excellent. At the program level, a seminar requirement and course evaluations were introduced.

The department remained focused on its five undergraduate programs. A major effort was made to improve student life and to review many aspects of the programs. The department continues to admit the 300 best students for its three streams of Electrical Engineering and Computer Engineering and has increased significantly the number of international students.

On the accreditation front, the department has done well with a successful accreditation of its graduate programs by OCGS and the accreditation of its Software Engineering program by CEAB.

The department is doing very well financially. The budget is balanced and shows an excellent carry forward in 2007. Money has been put aside for space acquisition that will yield an overall budget of \$4 million.

Responding to the need expressed by many in the department, a transparent administration was put in place with better defined processes. New policies and procedures were created, such as on space utilization and health and safety, and implemented. The faculty merit review process was clarified in terms of expectations.

Many staff positions were reviewed and several were reclassified. An innovative system for “career path” progression for technical staff has been proposed to HR and is almost finalized. New staff awards have been created to recognize excellence.

The research enterprise in the department has grown tremendously in the past two years, and the department is an active participant in all the cross-cutting major research thrusts in the faculty and the university. The research funding grew by more than 50 per cent in three years. In 2004/05, the departmental research funding was \$9.8 million, in 2005/06, it was just below \$12 million and in 2006/07, it is \$15 million. As an incentive, part of the research overhead is being returned to the faculty member generating it.

The greatest achievement has been the hiring of outstanding new faculty members, 18 since September 2004. This huge effort in hiring was made possible in part by the streamlining of the hiring process through a web-based system.

Maybe the most visible initiative was related to communications and industrial relations. The department hired a Director for Industry and Government Relations and has invested money and huge effort on that front. A portfolio of brochures and posters has been designed.

Nothing would have been possible without the wonderful commitments of many faculty and staff who worked very hard to make Vision 2010 a reality. The department is well positioned for the future. The major efforts made to increase graduate enrolment, expand the research enterprise, and plan and fund new space should allow the department to continue its growth smoothly.

F. MANAGEMENT SCIENCES

The Department of Management Sciences has worked hard towards achieving the goals set out in the Vision 2010 plan and is now in a position to focus on a slightly different set of priorities.

Our primary objective in the past year was to obtain approval to launch an undergraduate program, Management Engineering. It was approved in June of 2006, and with great collaborative communications and admissions efforts, we have admitted 97 students for the fall of 2007. We observed that students and their parents were excited about the content of the program once they had practical examples of what a management engineer might do, but were unfamiliar with the term “management engineering.” Our communications efforts in the coming year will focus on providing clear examples of management engineering work.

The department plans to hire a full-time lecturer to assist us with teaching the 12 sections of Engineering Economics management sciences is now responsible for. This will provide continuity of instruction, reduce the complexity in scheduling courses we now face and free up several of our professors to teach other courses in our curriculum.

The Department of Management Sciences has taken stewardship of Gene 452 (Technical Entrepreneurship) and is in the process of having its designation change to MSci.

Graduate FTE enrolment in management sciences has increased to 86.6 in 2006/07, up from 69.8, our baseline average enrolment for fiscal years 2001, 2002 and 2003. This is an increase of 24 per cent. Most of the increase was due to growth in our PhD program; our master’s degree enrolments are up only 7 per cent. Growth in 2006 was not as strong as we had hoped, but looks better for the fall of 2007 due to redoubled recruiting efforts. Graduate growth remains one of our top priorities as we move ahead.

Our annual graduate course enrolments have increased from 152 student-courses (baseline) to 282 for the financial year 2005/06, an increase of 85 per cent. This is largely due to our own enrolment growth, and students from other engineering departments taking our courses. Graduate expansion funds have been used to provide TA support for larger classes.

The new director for our online masters degree program (MOT@Distance), appointed in January 2006, has developed a fresh marketing strategy, made numerous operational improvements and established a collaborative educational model for instructors and students. Enrolments have been

hovering around 22 to 24 FTEs for the past few years; however we are now seeing stronger applications for the program and are striving for increased enrolments.

The top priority for the Department of Management Sciences this coming year is to complete a research plan. Out of this will come direction for faculty hiring associated with Management Engineering, and a means for the department to increase its research funding levels. This, in turn, will help us increase our graduate supervision intensity. Towards this end, we are making the transition from broadly defined research areas such as “operations research,” “information systems” and “management of technology” to more specific research thrust areas. We see a strong advantage to aligning our research areas to those established by the Faculty of Engineering, and are exploring the thrust area of health care management where there is social need, government funding and student interest. The department feels a strong alignment to INFORMS (Institute of Operations Research and Management Science), and finds its societies and special interest groups a good organizational model.

The department has invested heavily this year in streamlining several labour-intensive processes. We developed and implemented an online faculty application system to facilitate the hiring process, and participated in the development of OFIS, an online faculty information system intended to reduce the overall effort required to produce various reports (Merit, OCGS, CEAB).

Space is a major issue for the department as we phase in Management Engineering. Some 320 nasms will become available in 2008 (above the CPH multimedia room), which will relieve the current pinch for faculty offices. Building plans for the Faculty of Engineering will largely address our total need of 1300 nasms, however there will be several years where our needs will outstrip the space available – some internal reassignments will be necessary. The estimated cost of the space we need is \$7.8 million.

Our fundraising priorities have been clearly established: space and graduate expansion. Two proposals are currently out to potential donors, and the department has committed funds over the next five years that will amount to \$5 million in accumulated savings towards our space needs. We are hoping to find the balance in fundraising.

In terms of communications, we reviewed and completely updated our web pages in 2006, and developed a number of print pieces to promote Management Engineering and graduate studies in management sciences. These have been well received.

Management Engineering will bring 3 staff and 11 faculty to the department. Faculty recruiting is well underway, and planning for new staff has begun. Our current space for staff is adequate, but we are short on faculty offices and cannot accommodate the new staff or faculty hires. The space above the CPH multimedia lab is crucial for the department.

This is an exciting time for the department with many new initiatives underway. Our budget situation is better than it has been in many years, and as we look forward to expansion, we realize the importance of taking steps *now* to build for a strong future.

G. MECHANICAL AND MECHATRONICS ENGINEERING

This is the first update on the Department of Mechanical and Mechatronics Engineering's progress towards achieving the five key goals laid out in our Vision 2010 Strategic Plan. In implementing the plan, we seek to become recognized over time as the best mechanical engineering department in the country defined by its excellence in both teaching and research in the fields of mechanical and mechatronics engineering.

The first goal in our plan is to create a much-needed department identity and to expand physical space. We have made tremendous progress in this direction; our first expansion will be on two additional floors being constructed in the "Energy" building that will house the Center for Advanced Photovoltaic Devices and Systems on the first floor. The current research laboratories for solar research, fuel cell design and testing, hydrogen storage materials and atmospheric pollution modeling will be relocated to that building in the spring of 2008. Detailed floor drawings to consolidate the department's energy research activities and to accommodate seven faculty members, research associates and graduate students in the 1300 nasms of new space have been finalized. In addition, a layout for the department headquarters on the second floor of the five-storey Phase 1 Engineering Building has been completed after wide consultation with faculty and staff. The additional 1500 nasms of floor will create a distinct physical identity for the department and also accommodate the Waterloo Center for Automotive Research (WatCar) head office when built in 2010.

The second goal in our plan is to enhance external relations and to increase our visibility nationally and internationally. As the highest priority, the department website was overhauled and launched in January 2007 together with a new department logo. Another key implementation of the plan was the recruitment of a Director for Industry and Government Relations in February. Since then, graduate recruitment activities have intensified, particularly for our new Master of Engineering (MEng) Certificates in Design, Green Energy and Fire Safety Engineering. As the co-organizer of the highly successful Ontario-India Nanotechnology Workshop in June, the new position has helped raise our profile as an emerging leader in nanosystems and micro-device engineering and set the stage for research collaboration with the top nanotechnology institutions in India.

In addressing the third goal in the plan--to expand and enhance research--the department created a new associate chair for research in September 2006. The new portfolio is expected to further boost our research funding, which increased by 14 per cent from a year ago to \$ 6.7 million. Recruitment and retention of outstanding faculty remains a top priority in academic planning and expanding research capacity. Three new exceptional faculty members were hired in 2006 with expertise in plasticity modeling, structural biomechanics and experimental fluid mechanics. A coordinator for faculty mentoring has been appointed to develop a mentoring program that will align with the culture of the department. The remaining four positions to support the Mechatronics Engineering undergraduate program will be filled by the end of the year. The plan also targeted hiring in strategic areas of manufacturing processes, green energy, nanotechnology, fire safety engineering and automotive engineering. To date, the manufacturing processes position has been filled and the hiring process for the green energy position has begun.

We have implemented the main element in our fourth goal which is to establish a teaching chair to provide leadership across the department. The chair's appointment has provided concrete outcomes in the form of exceptionally high performance evaluations for young faculty, when advised and mentored. He has organized and facilitated nearly a dozen teaching forums to address a range of challenges in undergraduate and graduate teaching. At the same time, the teaching chair has developed and conducted an exit survey for the graduating class. The survey determined the perceptions of the 2007 graduating class of the current state of our undergraduate programs. Another important outcome is the establishment of a reliable baseline for assessing student satisfaction with courses and program.

As graduate education is a critical objective of both the university- and faculty-level strategic plans, the department committed to its fifth goal which is focused on expanding and improving the consistency of our graduate course offerings. In the past academic year, the department approved a proposal to offer two graduate courses annually from each of the sub-disciplines of automation and controls, fluid mechanics, materials engineering, solid mechanics and thermal engineering. Another ten courses will be offered regularly from the three MEng certificate initiatives. Our doctoral enrolments have steadily increased in recent years and our current enrolments of PhD and MASc students are almost equal. Although we were short of reaching our graduate complement target by five per cent, expanding the MEng program and increasing graduate student-to-faculty supervision ratio remain ongoing priorities.

Only a few highlights specific to the plan implementation have been mentioned in this brief account of the past year. This has also been an important year for the department in other areas. We have been preparing for imminent appraisals by the Canadian Engineering Accreditation Board (CEAB) and the Ontario Council on Graduate Studies this year. We have made significant strides in improving communications across the department, in team building and empowering staff in the decision-making process. Our new website has enabled us to recognize faculty, staff and student excellence in a public manner. We have begun to upgrade the physical gathering rooms and workspaces for our large graduating undergraduate class. We have also started updating existing safety policies and implementing new guidelines to manage safety in our rapidly expanding range of research equipment and laboratory facilities.

The Vision 2010 Strategic Plan will continue to be used as our compass to direct the course of the department and to allocate our operating, space and personnel resources over the next three years. Another round of university-imposed budget cuts has impacted our ability to realize all our initiatives. In spite of this, we have not allowed finite resources to divert us from our long-range goal. The past year has been one of substantial accomplishments, simply because of the extraordinary dedication, collaboration and tireless work of the academic and support staff and particularly the members of the MME Executive Committee. The momentum to fully achieve our plan targets remains fervent. Our implementation work to date has unfolded an inherent characteristic: the department is built upon a strong culture of shared commitment to excellence in both teaching and research. The next year will focus on integrating the two core activities to enhance our students' academic experience and on ensuring that the commitment to excellence has a human dimension. After all, our students, staff and faculty are the very people who have shaped the spirit of this amazing department.

H. SYSTEMS DESIGN ENGINEERING

During the 2006/07 academic year the Department of Systems Design Engineering made good progress towards meeting the objectives and goals set out in the Vision 2010 Strategic Plan.

The Department of Systems Design Engineering has reached the Vision 2010 Strategic Plan target of three teaching tasks per faculty member. The department's undergraduate and graduate curriculum committees have been working throughout 2006/07 to establish a revised undergraduate program that would see a design course in every term, a reduction in the number of undergraduate elective offerings from 21 to 12, and an increase in the number of annually offered graduate (600 level) courses from 11 to 18. These curriculum efforts are necessary for the department to position itself within the new undergraduate programs in the faculty and the emerging research directions in engineering.

During 2006 the Department of Systems Design Engineering was able to hire three new faculty members who will take up their positions next year. We made two hires in the cognitive Human Factors area which has been strengthened in the following two research directions. The first is user interface design as applied to multi-user simultaneous, collaborative and collocated digital work surface systems. The second is the design of task environments for human operators, as part of complex systems, to determine how new technologies, procedures and operating paradigms impact their performance with respect to system performance, safety, capacity, reliability and efficiency. The third hire has expanded the scope of the department's activities in the Human Systems area by adding a research expertise in biomedical engineering. This research activity aims to understand the mechanisms of material-induced cellular activation interactions between materials and biological systems.

During 2006 the Department of Systems Design Engineering had 21 faculty members, two of whom were with the CSTV. There were 13 faculty members who held a PEng registration and three who had applied for registration. Several department members received external recognition in 2006: Professor Abdel-Rahman was elected to the Dynamics and Control of Structures and Systems Technical Committee of the Applied Mechanics Division of the ASME, Professor Eliasmith (jointly appointed between Systems Design Engineering and Philosophy) was awarded a Tier II CRC, and Professor John Yeow was awarded an Ontario Early Researcher Award. After 42 years of service, Professor Barry Wills retired on August 1, 2006.

The 2006 recruitment efforts resulted in 89 students accepting our offers for admission to 1A. Of the 417 students enrolled in Systems Design Engineering last year 25.2 per cent were women.

The department was successful in increasing the number of graduate students in the department; an outcome that was helped by the infusion of support funds from the Dean of Engineering. In 2006, 29.3 per cent of the graduate students in Systems Design Engineering were women. The graduate students were divided almost equally between the MASc and PhD programs. Twenty four students graduated in 2006. The graduate curriculum is in the process of being revised with a view to increasing the number of graduate course offerings.

The department revised our Vision 2010 Strategic Plan goal to raise enough money for a dedicated building in favour of the new goal to fund space in the new Faculty of Engineering buildings and to renovate our existing space. The department has done very well with regard to the engagement of its alumni in our advancement efforts.

The top priority for the coming year is to complete the undergraduate and graduate curriculum revision process. For the graduate program it will mean the creation of a large number of new courses. Continuing with the hiring schedule laid out in the Vision 2010 Strategic Plan is also a high priority for 2007 as are securing additional research space and improving our financial circumstances.

APPENDIX A: Faculty and Staff

Total Faculty, 2006

October 1, 2006 count date; excludes research professors and visitors

(A) by department and gender

Program	Male	Female	Total	% Women
Architecture	12.5	4	16.5	24.2%
BET	1	0.5	1.5	33.3%
Chemical	23	3	26	11.5%
Civil & Environmental	28	5	33	15.2%
Electrical & Computer	64	6	70	8.6%
Management Sciences	15	3	18	16.7%
Mechanical & Mechatronics	36	7	43	16.3%
Systems Design	19	2	21	9.5%
Support Unit Offices	1	0	1	0.0%
TOTAL	199.5	30.5	230	13.3%

NOTE:

1. Systems Design includes 2 Centre for Society, Technology, and Values faculty

(B) by department and rank

Program	Professor	Assoc.Prof.	Asst.Prof.	Lecturer	Total
Architecture	1	11.5	3	1	16.5
BET	0	0	0.5	1	1.5
Chemical	12	9	5	0	26
Civil & Environmental	11	13.5	7.5	1	33
Electrical & Computer	31	23	11	5	70
Management Sciences	8	3	5	2	18
Mechanical & Mechatronics	18	10	15	0	43
Systems Design	7	8	5	1	21
Support Unit Offices	0	0	0	1	1
TOTAL	88	78	52	12	230

NOTE:

1. Systems Design includes 2 Centre for Society, Technology, and Values faculty

Two-year Comparison of Faculty Complement

October 1 count date; by department and gender; excludes research professors and visitors

Program	Total Faculty		% Women	
	2005	2006	2005	2006
Architecture	15.5	16.5	12.9%	24.2%
BET	n/a	1.5	n/a	33.3%
Chemical	26	26	11.5%	11.5%
Civil & Environmental	31	33	12.9%	15.2%
Electrical & Computer	65	70	10.0%	8.6%
Management Sciences	16	18	12.5%	16.7%
Mechanical & Mechatronics	40	43	17.5%	16.3%
Systems Design	20	21	10.0%	9.5%
Support Unit Offices	2	1	0.0%	0.0%
TOTAL	215.5	230	12.3%	13.3%

NOTE:

1. Systems Design includes 2 Centre for Society, Technology, and Values faculty

New Faculty, 2003-2006

Tenured and tenure-stream faculty hired during calendar years 2003, 2004, 2005 & 2006

(A) by department and gender

Program	Male	Female	Total	% Women
Architecture	1	2	3	0.0%
BET	1	0.5	1.5	0.0%
Chemical	4	0	4	0.0%
Civil & Environmental	9	1	10	10.0%
Electrical & Computer	13	1	14	7.1%
Management Sciences	4	1	5	20.0%
Mechanical & Mechatronics	10	5	15	33.3%
Systems Design	3	0	3	0.0%
TOTAL	45	10.5	55.5	18.9%

New Faculty, 2003-2006

Tenured and tenure-stream faculty hired during calendar years 2003, 2004, 2005 & 2006

(B) by department and PhD School

Program	Waterloo	Ontario ¹	Canada ²	USA	Intern'l	Total
Architecture	0	0	0	0	1	1
BET	0	0	0	1	0	1
Chemical	0	0	0	4	0	4
Civil & Environmental	2	0	1	6	1	10
Electrical & Computer	1	3	0	5	5	14
Management Sciences	2	0	1	2	0	5
Mechanical & Mechatronics	1	3	4	3	4	15
Systems Design	0	2	1	0	0	3
TOTAL	6	8	7	21	11	53

- NOTES:**
1. Ontario excludes University of Waterloo
 2. Canada excludes Ontario

New Faculty, 2006

Tenured and tenure-stream faculty hired during calendar year 2006

(A) by department and gender

Program	Male	Female	Total	% Women
Architecture	1	2	3	66.7%
BET	1	0	1	0.0%
Chemical	0	0	0	0.0%
Civil & Environmental	2	1	3	33.3%
Electrical & Computer	4	0	4	0.0%
Management Sciences	0	1	1	100.0%
Mechanical & Mechatronics	3	0	3	0.0%
Systems Design	0	0	0	0.0%
TOTAL	11	4	15	26.7%

New Faculty, 2006

Tenured and tenure-stream faculty hired during calendar year 2006

(B) by department and PhD School

Program	Waterloo	Ontario ¹	Canada ²	USA	Intern'l	Total
Architecture	0	0	0	0	1	1
BET	0	0	0	1	0	1
Chemical	0	0	0	0	0	0
Civil & Environmental	0	0	0	2	1	3
Electrical & Computer	0	1	1	3	0	5
Management Sciences	0	0	1	0	0	1
Mechanical & Mechatronics	0	1	0	1	0	2
Systems Design	0	0	0	0	0	0
TOTAL	0	2	2	7	2	13

- NOTES:**
1. Ontario excludes University of Waterloo
 2. Canada excludes Ontario

FTE Staff, 2006

October 1, 2006 count date of full-time equivalent positions paid from the operating budget

(A) by department and gender

Program	Male	Female	Total	% Women
Architecture	2.67	7	9.7	72.4%
BET	0	2	2.0	100.0%
Chemical	7	7	14.0	50.0%
Civil & Environmental	8.5	6	14.5	41.4%
Electrical & Computer	16	16.5	32.5	50.8%
Management Sciences	0.4	3	3.4	88.2%
Mechanical & Mechatronics	10.6	11	21.6	50.9%
Systems Design	4	4	8.0	50.0%
Dean's Office-admin	1	9.67	10.7	90.6%
Dean's Office-advancement	0.5	5.5	6.0	91.7%
Undergraduate Office	2	11	13.0	84.6%
Engineering Computing	9	2	11.0	18.2%
Engineering Machine Shop	10	0.5	10.5	4.8%
TOTAL	71.67	85.17	156.84	54.3%

- NOTE:**
1. Undergraduate Office includes 2 PDEng staff.

FTE Staff, 2006

October 1, 2006 count date of full-time equivalent positions paid from the operating budget

(B) by department and type

Program	Tech	Admin	Total
Architecture	0.67	9	9.67
BET	0	2	2
Chemical	8	6	14
Civil & Environmental	8.5	6	14.5
Electrical & Computer	20	12.5	32.5
Management Sciences	0.4	3	3.4
Mechanical & Mechatronics	13.6	8	21.6
Systems Design	4	4	8
Dean's Office-admin	0	10.67	10.67
Dean's Office-advancement	0	6	6
Undergraduate Office	0	13	13
Engineering Computing	10	1	11
Engineering Machine Shop	10	0.5	10.5
TOTAL	75.17	81.67	156.84

NOTE: 1. Undergraduate Office includes 2 PDEng staff.

Two-year Comparison of Staff Complement

October 1 count date of full-time equivalent positions paid from the operating budget;
by department

Program	2005	2006
Architecture	9.7	9.7
BET		2
Chemical	13.5	14
Civil & Environmental	14.5	14.5
Electrical & Computer	31.5	32.5
Management Sciences	3.4	3.4
Mechanical & Mechatronics	21.6	21.6
Systems Design	8.5	8
Dean's Office-admin	10.7	10.7
Dean's Office-advancement	8	6
Undergraduate Office	8	13
Engineering Computing	11	11
Engineering Machine Shop	10	10.5
TOTAL	150.4	156.84

NOTE: 1. In 2006, Undergraduate Office includes 2 PDEng staff.

Selected Major Awards and Honours

January - December 2006

Name	Dept/Unit	Award
Bill Annable	Civil & Environmental	Canada Construction Association Environmental Achievement Award
Claudio Canizares	Electrical & Computer	Fellow of the IEEE
John Chatzis	Chemical	Technical Achievement Award, Society of Core Analysts
Chris Eliasmith	Systems Design	Canada Research Chair in Theoretical Neuroscience
Thomas Fahidy	Chemical	Fellow of the Electrochemical Society
Carolyn Hansson	Mechanical & Mechatronics	Honorary Professor, Warsaw University of Technology
Ralph Haas	Civil & Environmental	Fellow of the Engineering Institute of Canada
Rick Haldenby	Architecture	Fellow of the Royal Architectural Institute of Canada
Carolyn Hansson	Mechanical & Mechatronics	Fellow of the American Concrete Institute
Peter Huck	Civil & Environmental	Von Humbolt Foundation Fellowship
Amir Khajepour	Mechanical & Mechatronics	Fellow of the Canadian Mechanical Engineering Society
Amir Khandani	Electrical & Computer	NSERC-Nortel Chair in Advanced Telecommunications Technology
Moren Levesque	Management Sciences	Canada Research Chair in Innovation and Technical Entrepreneurship
John McMinn	Architecture	Applied Arts Magazine 2006 Design Award
John McPhee	Systems Design	Fellow of the American Society of Mechanical Engineers
William Melek	Mechanical & Mechatronics	Professional Engineers of Ontario Young Engineer Medal
Flora Ng	Chemical	UW University Research Chair
Magdy Salama	Electrical & Computer	UW Award of Excellence in Research
Sherman Shen	Electrical & Computer	UW Award of Excellence in Graduate Supervision
Peter Silverston	Chemical	Fellow of the Chemical Institute of Canada
Leonardo Simon	Chemical	Young Canadian Innovator Award, OMAFRA
Geoff Thun	Architecture	Governor General's Medal

Changes to the Faculty Complement

October 1, 2005 - October 1, 2006

Department	New Hires	Retirements/Resignations
Architecture	Tracey Winton	Robert Wiljer
	Lola Sheppard	
BET		
Chemical		
Civil & Environmental	Scott Walbridge	Don Grierson
	Sriram Narasimhan	
	Katerina Papoulia	
Electrical & Computer	Dayan Ban	Andrew Wong
	Thorsten Hesjedal	Arokia Nathan
	M.P. Anantram	
	David Nairn	
	Todd Veldhuizen	
	Liang-Liang Xie	
Management Sciences	Moren Levesque	
	Peter Carr	
Mechanical & Mechatronics	Serhiy Yarusevych	
	Kaan Inal	
	Naveen Chandrashekar	
Systems Design	Eihab Abdel-Rahman	
TOTAL	17	4

APPENDIX B: Undergraduate Studies

Undergraduate Enrolment, 2006

November 1, 2006 count date, including students on official co-op work term

(A) by program and gender

Program	Male	Female	Total	% Women
Architecture	151	191	342	55.8%
Chemical	377	182	559	32.6%
Civil	347	109	456	23.9%
Computer	686	63	749	8.4%
Electrical	594	94	688	13.7%
Environmental	92	68	160	42.5%
Geological	51	15	66	22.7%
Mechanical	774	77	851	9.0%
Mechatronics	380	40	420	9.5%
Nanotechnology	162	33	195	16.9%
Software	390	48	438	11.0%
Systems Design	312	105	417	25.2%
TOTAL	4316	1025	5341	19.2%

(B) by program and visa status

Program	Canadian	Visa	Total	% Visa
Architecture	330	12	342	3.5%
Chemical	535	24	559	4.3%
Civil	443	13	456	2.9%
Computer	719	30	749	4.0%
Electrical	654	34	688	4.9%
Environmental	154	6	160	3.8%
Geological	61	5	66	7.6%
Mechanical	826	25	851	2.9%
Mechatronics	392	28	420	6.7%
Nanotechnology	185	10	195	5.1%
Software	420	18	438	4.1%
Systems Design	411	6	417	1.4%
TOTAL	5130	211	5341	4.0%

Two-year Comparison of Undergraduate Enrolment

November 1 count date, including students on official co-op work term

(A) by program and gender

Program	Total Enrolment		% Women	
	2005	2006	2005	2006
Architecture	329	342	57.8%	55.8%
Chemical	516	559	35.7%	32.6%
Civil	427	456	24.8%	23.9%
Computer	805	749	8.4%	8.4%
Electrical	639	688	14.7%	13.7%
Environmental	178	160	41.0%	42.5%
Geological	70	66	21.4%	22.7%
Mechanical	842	851	10.8%	9.0%
Mechatronics	333	420	9.9%	9.5%
Nanotechnology	106	195	14.2%	16.9%
Software	443	438	12.4%	11.0%
Systems Design	421	417	28.0%	25.2%
TOTAL	5109	5341	20.4%	19.2%

(B) by program and visa status

Program	Total Enrolment		% Visa	
	2005	2006	2005	2006
Architecture	329	342	3.0%	3.5%
Chemical	516	559	2.9%	4.3%
Civil	427	456	2.1%	2.9%
Computer	805	749	2.9%	4.0%
Electrical	639	688	2.2%	4.9%
Environmental	178	160	1.7%	3.8%
Geological	70	66	5.7%	7.6%
Mechanical	842	851	2.4%	2.9%
Mechatronics	333	420	5.4%	6.7%
Nanotechnology	106	195	3.8%	5.1%
Software	443	438	2.5%	4.1%
Systems Design	421	417	1.0%	1.4%
TOTAL	5109	5341	2.6%	4.0%

Undergraduate Degrees Awarded, 2006

Degrees awarded at spring and fall convocation 2006 by program and gender
Includes BASc, BArch, and BAS degrees awarded

Program	Male	Female	Total	% Women
Architecture	32	31	63	49.2%
Chemical	32	30	62	48.4%
Civil	60	18	78	23.1%
Computer	119	11	130	8.5%
Electrical	98	18	116	15.5%
Environmental	25	17	42	40.5%
Geological	7	4	11	36.4%
Mechanical	123	25	148	16.9%
Software	71	9	80	11.3%
Systems Design	49	31	80	38.8%
TOTAL	616	194	810	24.0%

Two-year Comparison of Undergraduate Degrees Awarded

Degrees awarded at spring and fall convocation
Includes BASc, BArch, and BAS degrees awarded
By program and gender

Program	Total UG Degrees		% Women	
	2005	2006	2005	2006
Architecture	79	63	45.6%	49.2%
Chemical	62	62	62.9%	48.4%
Civil	69	78	15.9%	23.1%
Computer	242	130	13.2%	8.5%
Electrical	94	116	16.0%	15.5%
Environmental	46	42	43.5%	40.5%
Geological	12	11	50.0%	36.4%
Mechanical	138	148	13.0%	16.9%
Software	n/a	80	n/a	11.3%
Systems Design	73	80	32.9%	38.8%
TOTAL	815	810	24.7%	24.0%

Undergraduate Students:Faculty Ratio, 2006

Annual Undergraduate FTE, 2005-2006, to Total Regular Faculty Members, 2006

Department	FTE Undergraduates	Total Regular Faculty	Student:Faculty Ratio
Architecture	278.4	16.5	16.9
BET	0	1.5	
Chemical	444.1	26	17.1
Civil & Environmental	537	33	16.3
Electrical & Computer	1357.2	70	19.4
Management Sciences	0	18	n/a
Mechanical & Mechatronics	805.7	43	18.7
Systems Design	388.8	19	20.5
Other Faculty Offices	0	1	n/a
TOTAL	3811.2	228	16.7

NOTES:

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

Students in joint programs are allocated to departments as follows:

Software = 1/2 to E&CE

Mechatronics = 3/5 to ME, 1/5 to SYDE, 1/5 to E&CE

Nanotechnology = 1/3 to Chem, 1/3 to E&CE

This FTE differs from FTE by program because 1/2 of Software and 1/3 of Nanotechnology are outside the Faculty of Engineering

Total Regular faculty members = October 1 count date, excluding visiting and research professors

Systems Design faculty here excludes 2 Centre for Society, Technology, and Values faculty

Two-year Comparison of Undergraduate Student:Faculty Ratios

Annual Undergraduate FTE to Total Regular Faculty Members

Department	Student:Faculty Ratio 2005	Student:Faculty Ratio 2006
Architecture	18.7	16.9
BET	n/a	n/a
Chemical	15.7	17.1
Civil & Environmental	16.9	16.3
Electrical & Computer	21.7	19.4
Management Sciences	n/a	n/a
Mechanical & Mechatronics	19	18.7
Systems Design	20.6	20.5
TOTAL	17.6	16.7

NOTES:

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

Students in joint programs are allocated to departments as follows:

Software = 1/2 to E&CE

Mechatronics = 3/5 to ME, 1/5 to SYDE, 1/5 to E&CE

Nanotechnology = 1/3 to Chem, 1/3 to E&CE

This FTE differs from FTE by program because 1/2 of Software and 1/3 of Nanotechnology are outside the Faculty of Engineering

Total Regular faculty members = October 1 count date, excluding visiting and research professors

Systems Design faculty here excludes 2 Centre for Society, Technology, and Values faculty

Undergraduate Students:Staff Ratios, 2006

FTE staff paid from operating budget to 2005/2006 annual FTE undergraduate students

Degree Program	Admin Staff	Tech Staff	Total Staff	FTE Stdts	Ratios		
					Students to Admin Staff	Students to Tech Staff	Students to Total Staff
Architecture	9	0.67	9.67	278.4	30.93	415.52	28.79
BET	2	0	2	0	n/a	n/a	n/a
Chemical	6	8	14	444.1	74.02	55.51	31.72
Civil & Environmental	6	8.5	14.5	537	89.50	63.18	37.03
Electrical & Computer	12.5	20	32.5	1357.2	108.58	67.86	41.76
Management Sciences	3	0.4	3.4	0	n/a	n/a	n/a
Mechanical & Mechatronics	8	13.6	21.6	805.7	100.71	59.24	37.30
Systems Design	4	4	8	388.8	97.20	97.20	48.60
Support Units	31.17	20	51.17	0	n/a	n/a	n/a
TOTAL	81.67	75.17	156.8	3811.2	46.67	50.70	24.30

NOTES:

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

Students in joint programs are allocated to departments as follows:

Software = 1/2 to E&CE

Mechatronics = 3/5 to ME, 1/5 to SYDE, 1/5 to E&CE

Nanotechnology = 1/3 to Chem, 1/3 to E&CE

This FTE differs from FTE by program because 1/2 of Software and 1/3 of Nanotechnology are outside the Faculty of Engineering.

Two-year Comparison of Undergraduate Student:Staff Ratios

FTE staff paid from operating budget to annual FTE undergraduate students

Degree Program	Ratios					
	Students to Admin Staff		Students to Tech Staff		Students to Total Staff	
	2005	2006	2005	2006	2005	2006
Architecture	48.25	30.93	78.24	415.52	29.85	28.79
BET	n/a	n/a	n/a	n/a	n/a	n/a
Chemical	68.23	74.02	54.59	55.51	30.33	31.72
Civil & Environmental	87.32	89.50	61.64	63.18	36.13	37.03
Electrical & Computer	122.70	108.58	70.56	67.86	44.80	41.76
Management Sciences	n/a	n/a	n/a	n/a	n/a	n/a
Mechanical & Mechatronics	94.83	100.71	55.78	59.24	35.12	37.30
Systems Design	82.38	97.20	92.68	97.20	43.61	48.60
Support Units	n/a	n/a	n/a	n/a	n/a	n/a
TOTAL	52.86	46.67	47.52	50.70	25.02	24.30

NOTES:

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

Students in joint programs are allocated to departments as follows:

Software = 1/2 to E&CE

Mechatronics = 3/5 to ME, 1/5 to SYDE, 1/5 to E&CE

Nanotechnology = 1/3 to Chem, 1/3 to E&CE

This FTE differs from FTE by program because 1/2 of Software and 1/3 of Nanotechnology are outside the Faculty of Engineering

Undergraduate Year One New Admissions

Performance to Target, Fall 2006

November 1, 2006 count date, including students on official co-op work term

Degree Program							% OF TARGET	
	TARGET			ACTUAL			% of total	% of intern'l
	Canadian/PR	International	Total	Canadian/PR	International	Total		
Architecture	62	10	72	83	5	88	122.22%	50.0%
Chemical	115	10	125	122	12	134	107.20%	120.0%
Civil	95	5	100	115	6	121	121.00%	120.0%
Electrical & Computer	300	25	325	324	31	355	109.23%	124.0%
Environmental	35	3	38	40	4	44	115.79%	133.3%
Geological	15	2	17	18	2	20	117.65%	100.0%
Mechanical	180	10	190	189	8	197	103.68%	80.0%
Mechatronics	100	10	110	101	10	111	100.91%	100.0%
Nanotechnology	102	8	110	104	8	112	101.82%	100.0%
Software	100	7	107	110	10	120	112.15%	142.9%
Systems Design	90	0	90	84	2	86	95.56%	n/a
TOTAL	1194	90	1284	1290	98	1388	108.10%	108.9%

Two-year Comparison of Undergraduate Year One New Admissions Performance to Target

November 1 count date, including students on official co-op work term

Degree Program	2005			2006			2005		2006	
	Canadian/PR	International	Total	Canadian/PR	International	Total	% of total target	% of intern'l target	% of total target	% of intern'l target
Architecture	63	6	69	83	5	88	95.8%	85.7%	122.2%	50.0%
Chemical	120	7	127	122	12	134	101.6%	70.0%	107.2%	120.0%
Civil	90	5	95	115	6	121	95.0%	100.0%	121.0%	120.0%
Electrical & Computer	318	15	333	324	31	355	104.1%	75.0%	109.2%	124.0%
Environmental	39	1	40	40	4	44	105.3%	33.3%	115.8%	133.0%
Geological	17	3	20	18	2	20	117.7%	150.0%	117.7%	100.0%
Mechanical	179	10	189	189	8	197	99.5%	100.0%	103.7%	80.0%
Mechatronics	106	12	118	101	10	111	107.3%	120.0%	100.9%	100.0%
Nanotechnology	102	4	106	104	8	112	106.0%	80.0%	101.8%	100.0%
Software	106	4	110	110	10	120	104.8%	80.0%	112.2%	142.9%
Systems Design	85	2	87	84	2	86	98.7%	n/a	95.6%	n/a
TOTAL	1225	69	1294	1290	98	1388	102.1%	89.6%	108.1%	108.9%

Undergraduate Co-op Employment Statistics 2006

Program	Seeking Employment	Employed	Unemployed	% Employed
Winter 2006				
Architecture	173	170	3	98.3%
Chemical	220	211	9	95.9%
Civil	166	165	1	99.4%
Computer	466	459	7	98.5%
Electrical	208	200	8	96.2%
Environmental	78	74	4	94.9%
Geological	32	30	2	93.8%
Mechanical	342	334	8	97.7%
Mechatronics	217	207	10	95.4%
Nanotechnology	n/a	n/a	n/a	n/a
Software	172	171	1	99.4%
Systems Design	161	161	0	100.0%
Winter 2006 Total	2235	2182	53	97.6%
Spring 2006				
Architecture	119	118	1	99.2%
Chemical	211	193	18	91.5%
Civil	179	172	7	96.1%
Computer	173	171	2	98.8%
Electrical	203	198	5	97.5%
Environmental	44	43	1	97.7%
Geological	21	20	1	95.2%
Mechanical	328	304	24	92.7%
Mechatronics	101	100	1	99.0%
Nanotechnology	98	85	13	86.7%
Software	158	158	0	100.0%
Systems Design	196	190	6	96.9%
Spring 2006 Total	1831	1752	79	95.7%
Fall 2006				
Architecture	71	71	0	100.0%
Chemical	201	201	0	100.0%
Civil	160	160	0	100.0%
Computer	440	440	0	100.0%
Electrical	278	276	2	99.3%
Environmental	69	69	0	100.0%
Geological	27	27	0	100.0%
Mechanical	318	318	0	100.0%
Mechatronics	207	207	0	100.0%
Nanotechnology	n/a	n/a	n/a	n/a
Software	170	170	0	100.0%
Systems Design	151	151	0	100.0%
Fall 2006 Total	2092	2090	2	99.9%
2006 Total	6158	6024	134	97.8%

Faculty:Staff Ratios, 2006

FTE staff paid from operating budget to tenured and tenure-stream faculty; as of October 1, 2006

Degree Program	Admin Staff	Tech Staff	Total Staff	Total Faculty	Ratios		
					Faculty to Admin Staff	Faculty to Tech Staff	Faculty to Total Staff
Architecture	9	0.67	9.67	16.5	1.83	24.63	1.71
BET	2	0	2	1.5	0.75	n/a	0.75
Chemical	6	8	14	26	4.33	3.25	1.86
Civil & Environmental	6	8.5	14.5	33	5.50	3.88	2.28
Electrical & Computer	12.5	20	32.5	70	5.60	3.50	2.15
Management Sciences	3	0.4	3.4	18	6.00	45.00	5.29
Mechanical & Mechatronics	8	13.6	21.6	43	5.38	3.16	1.99
Systems Design	4	4	8	21	5.25	5.25	2.63
Support Units	31.17	20	51.17	1	n/a	n/a	n/a
TOTAL	81.67	75.17	156.8	230	2.82	3.06	1.47

Two-year Comparison of Faculty:Staff Ratios

FTE staff paid from operating budget to tenured and tenure-stream faculty; as of October 1

Degree Program	Ratios					
	Faculty to Admin Staff		Faculty to Tech Staff		Faculty to Total Staff	
	2005	2006	2005	2006	2005	2006
Architecture	2.42	1.83	3.92	24.63	1.49	1.71
BET	n/a	0.75	n/a	n/a	n/a	0.75
Chemical	4.33	4.33	3.47	3.25	1.93	1.86
Civil & Environmental	5.00	5.50	3.53	3.88	2.07	2.28
Electrical & Computer	5.22	5.60	3.00	3.50	1.90	2.15
Management Sciences	5.00	6.00	37.50	45.00	4.41	5.29
Mechanical & Mechatronics	5.00	5.38	2.94	3.16	1.85	1.99
Systems Design	4.22	5.25	4.75	5.25	2.24	2.63
Support Units	n/a	n/a	n/a	n/a	n/a	n/a
TOTAL	2.89	2.82	2.59	3.06	1.37	1.47

APPENDIX C: Graduate Studies

Graduate Enrolment, 2006

November 1, 2006 count date, including full- and part-time students

(A) by department and gender

Program	Male	Female	Total	% Women
Architecture	36	37	73	50.7%
BET	22	11	33	33.3%
Chemical	83	37	120	30.8%
Civil & Environmental	119	49	168	29.2%
Electrical & Computer	323	59	382	15.4%
Management Sciences	116	53	169	31.4%
Mechanical & Mechatronics	162	25	187	13.4%
Systems Design	65	27	92	29.3%
TOTAL	926	298	1224	24.3%

(B) by department and visa status

Program	Cdn/PR	Visa	Total	% Visa
Architecture	70	3	73	4.1%
BET	28	5	33	15.2%
Chemical	64	56	120	46.7%
Civil & Environmental	124	44	168	26.2%
Electrical & Computer	244	138	382	36.1%
Management Sciences	139	30	169	17.8%
Mechanical & Mechatronics	150	37	187	19.8%
Systems Design	73	19	92	20.7%
TOTAL	892	332	1224	27.1%

(C) by department and degree

Program	PhD	Thesis Masters	Coursewk Masters	Non Degree
Architecture	0	70	0	3
BET	0	0	33	0
Chemical	77	39	4	0
Civil & Environmental	67	66	35	0
Electrical & Computer	214	126	41	1
Management Sciences	30	22	116	1
Mechanical & Mechatronics	80	75	28	4
Systems Design	42	42	1	7
TOTAL	510	440	258	16

Two-year Comparison of Graduate Enrolment

November 1 count date, including full- and part-time students

(A) by department and gender

Program	Total Enrolment		% Women	
	2005	2006	2005	2006
Architecture	65	73	56.9%	50.7%
BET	n/a	33	n/a	33.3%
Chemical	114	120	30.7%	30.8%
Civil & Environmental	154	168	24.0%	29.2%
Electrical & Computer	344	382	16.6%	15.4%
Management Sciences	167	169	26.3%	31.4%
Mechanical & Mechatronics	183	187	13.1%	13.4%
Systems Design	88	92	23.9%	29.3%
TOTAL	1115	1224	22.9%	24.3%

(B) by department and visa status

Program	Total Enrolment		% Visa	
	2005	2006	2005	2006
Architecture	65	73	3.1%	4.1%
BET	n/a	33	n/a	15.2%
Chemical	114	120	45.6%	46.7%
Civil & Environmental	154	168	26.0%	26.2%
Electrical & Computer	344	382	38.7%	36.1%
Management Sciences	167	169	15.0%	17.8%
Mechanical & Mechatronics	183	187	18.0%	19.8%
Systems Design	88	92	30.7%	20.7%
TOTAL	1115	1224	28.0%	27.1%

Graduate Degrees Awarded, 2006

Degrees awarded at spring and fall convocation, 2006

Includes MAsC, MArch, MMSc, MEng, and PhD degrees awarded

(A) by department and gender

Program	Male	Female	Total	% Women
Architecture	13	14	27	51.9%
BET	15	16	31	51.6%
Chemical	16	11	27	40.7%
Civil & Environmental	37	9	46	19.6%
Electrical & Computer	70	11	81	13.6%
Management Sciences	51	17	68	25.0%
Mechanical & Mechatronics	59	9	68	13.2%
Systems Design	19	5	24	20.8%
TOTAL	280	92	372	24.7%

(B) by degree

Degree	Total
MArch	27
MAsC	145
MBET	31
MMSc	41
MEng	66
PhD	62
TOTAL	372

Two-year Comparison of Graduate Degrees Awarded

Degrees awarded at spring and fall convocation

Includes MAsC, MArch, MBET, MMSc, MEng, and PhD degrees awarded

(A) by department and gender

Program	Total Grad Degrees		% Women	
	2005	2006	2005	2006
Architecture	30	27	56.7%	51.9%
BET	n/a	31	n/a	51.6%
Chemical	36	27	30.6%	40.7%
Civil & Environmental	38	46	18.4%	19.6%
Electrical & Computer	60	81	11.7%	13.6%
Management Sciences	37	68	27.0%	25.0%
Mechanical & Mechatronics	58	68	20.7%	13.2%
Systems Design	31	24	29.0%	20.8%
TOTAL	290	372	25.2%	24.7%

(B) by degree

Degree	2005	2006
MArch	30	27
MAsC	146	145
MBET	n/a	31
MMSc	15	41
MEng	43	66
PhD	56	62
TOTAL	290	372

Two-year Comparison of Graduate Enrolment

November 1 count date, including full- and part-time students

(C) by department and degree

Program	PhD		Thesis Masters		Coursewk Masters		Non Degree	
	2005	2006	2005	2006	2005*	2006	2005	2006
Architecture	0	0	61	70	0	0	4	3
BET	n/a	0	n/a	0	n/a	33	n/a	0
Chemical	67	77	39	39	7	4	1	0
Civil & Environmental	61	67	59	66	34	35	0	0
Electrical & Computer	201	214	119	126	24	41	0	1
Management Sciences	26	30	28	22	112	116	1	1
Mechanical & Mechatronics	63	80	74	75	45	28	1	4
Systems Design	42	42	38	42	1	1	7	7
TOTAL	460	510	418	440	223	258	14	16

* Includes 2005 cost recovery students

FTE Graduate Enrolment, 2006

November 1, 2006 FTE enrolment

Department	Degree Type	Canadian/PR	International	Total
Architecture ¹	PhD	0.0	0.0	0.0
	Masters - thesis	71.8	1.0	72.8
	Masters - coursework	0.0	0.0	0.0
	TOTAL	71.8	1.0	72.8
Centre for Business, Entrepreneurship & Technology	PhD	0.0	0.0	0.0
	Masters - thesis	0.0	0.0	0.0
	Masters - coursework	28.0	5.0	33.0
	TOTAL	28.0	5.0	33.0
Chemical Engineering	PhD	28.5	45.0	73.5
	Masters - thesis	25.2	11.0	36.2
	Masters - coursework	1.9	0.0	1.9
	TOTAL	55.6	56.0	111.6
Civil & Environmental Engineering	PhD	30.1	32.0	62.1
	Masters - thesis	50.5	12.0	62.5
	Masters - coursework	26.6	0.0	26.6
	TOTAL	107.2	44.0	151.2
Electrical & Computer Engineering	PhD	111.9	91.6	203.5
	Masters - thesis	69.5	43.0	112.5
	Masters - coursework	8.7	1.0	9.7
	TOTAL	190.1	135.6	325.7
Management Sciences	PhD	17.7	6.0	23.7
	Masters - thesis	11.5	7.3	18.8
	Masters - coursework	40.5	13.6	54.1
	TOTAL	69.7	26.9	96.6
Mechanical & Mechatronics Engineering	PhD	49.5	27.0	76.5
	Masters - thesis	61.8	9.0	70.8
	Masters - coursework	15.4	0.0	15.4
	TOTAL	126.7	36.0	162.7
Systems Design Engineering	PhD	29.8	8.0	37.8
	Masters - thesis	34.5	4.0	38.5
	Masters - coursework	1.0	0.0	1.0
	TOTAL	65.3	12.0	77.3
TOTAL	PhD	267.5	209.6	477.1
	Masters - thesis	324.8	87.3	412.1
	Masters - coursework	122.1	19.6	141.7
	TOTAL	714.4	316.5	1030.9

NOTES: Fall term FTE = November 1, 2006 enrolment: FT+(PT*0.3)

¹ Architecture total is annualized FTE for 2005/2006, not fall term FTE

Graduate Students:Faculty Ratio, 2006

November 1, 2006 FTE enrolment to tenured & tenure-stream faculty as of October 1, 2006

Department	Degree Type	FTE Students	Tenured & Tenure-Stream Faculty	Ratio
Architecture ¹	PhD	0.0	15.5	0.0
	Masters - thesis	72.8	15.5	4.7
	Masters - coursework	0.0	15.5	0.0
	All research students	72.8	15.5	4.7
	All students	72.8	15.5	4.7
Centre for Business, Entrepreneurship & Technology	PhD	0.0	0.5	0.0
	Masters - thesis	0.0	0.5	0.0
	Masters - coursework	33.0	0.5	66.0
	All research students	0.0	0.5	0.0
	All students	33.0	0.5	66.0
Chemical Engineering	PhD	73.5	26.0	2.8
	Masters - thesis	36.2	26.0	1.4
	Masters - coursework	1.9	26.0	0.1
	All research students	109.7	26.0	4.2
	All students	111.6	26.0	4.3
Civil & Environmental Engineering	PhD	62.1	32.0	1.9
	Masters - thesis	62.5	32.0	2.0
	Masters - coursework	26.6	32.0	0.8
	All research students	124.6	32.0	3.9
	All students	151.2	32.0	4.7
Electrical & Computer Engineering	PhD	203.5	65.0	3.1
	Masters - thesis	112.5	65.0	1.7
	Masters - coursework	9.7	65.0	0.1
	All research students	316.0	65.0	4.9
	All students	325.7	65.0	5.0
Management Sciences	PhD	23.7	16.0	1.5
	Masters - thesis	18.8	16.0	1.2
	Masters - coursework	54.1	16.0	3.4
	All research students	42.5	16.0	2.7
	All students	96.6	16.0	6.0
Mechanical & Mechatronics Engineering	PhD	76.5	43.0	1.8
	Masters - thesis	70.8	43.0	1.6
	Masters - coursework	15.4	43.0	0.4
	All research students	147.3	43.0	3.4
	All students	162.7	43.0	3.8
Systems Design Engineering	PhD	37.8	20.0	1.9
	Masters - thesis	38.5	20.0	1.9
	Masters - coursework	1.0	20.0	0.1
	All research students	76.3	20.0	3.8
	All students	77.3	20.0	3.9

TOTAL	PhD	477.1	218.0	2.2
	Masters - thesis	412.1	218.0	1.9
	Masters - coursework	141.7	218.0	0.7
	All research students	889.2	218.0	4.1
	All students	1030.9	218.0	4.7

NOTES: Fall term FTE = November 1, 2006 enrolment: FT+(PT*0.3)

¹ Architecture total is annualized FTE for 2005/2006, not fall term FTE

Two-year Comparison of FTE Graduate Enrolment

November 1 FTE enrolment

Department	Degree Type	Canadian/PR		International		Total	
		2005*	2006	2005*	2006	2005*	2006
Architecture ¹	PhD		0.0		0		0
	Masters - thesis	74.9	71.8	1.7	1	76.6	72.8
	Masters - coursework		0.0		0		0
	TOTAL	74.9	71.8	1.7	1	76.6	72.8
Centre for Business, Entrepreneurship & Technology	PhD		0.0		0		0
	Masters - thesis		0.0		0		0
	Masters - coursework		28.0		5		33
	TOTAL		28.0		5		33
Chemical Engineering	PhD	25.2	28.5	39.0	45	64.2	73.5
	Masters - thesis	24.9	25.2	12.0	11	36.9	36.2
	Masters - coursework	6.3	1.9		0	6.3	1.9
	TOTAL	56.4	55.6	51.0	56	107.4	111.6
Civil & Environmental Engineering	PhD	27.1	30.1	28.3	32	55.4	62.1
	Masters - thesis	45.5	50.5	10.0	12	55.5	62.5
	Masters - coursework	29.5	26.6	1.0	0	30.5	26.6
	TOTAL	102.1	107.2	39.3	44	141.4	151.2
Electrical & Computer Engineering	PhD	98.2	111.9	92.0	91.6	190.2	203.5
	Masters - thesis	61.9	69.5	40.3	43	102.2	112.5
	Masters - coursework	7.2	8.7		1	7.2	9.7
	TOTAL	167.3	190.1	132.3	135.6	299.6	325.7
Management Sciences	PhD	17.8	17.7	4.0	6	21.8	23.7
	Masters - thesis	16.1	11.5	7.0	7.3	23.1	18.8
	Masters - coursework	43.0	40.5	10.9	13.6	53.9	54.1
	TOTAL	76.9	69.7	21.9	26.9	98.8	96.6
Mechanical & Mechatronics Engineering	PhD	35.1	49.5	23.0	27	58.1	76.5
	Masters - thesis	59.1	61.8	9.3	9	68.4	70.8
	Masters - coursework	29.5	15.4		0	29.5	15.4
	TOTAL	123.7	126.7	32.3	36	156.0	162.7

Systems Design Engineering	PhD	28.5	29.8	10.0	8	38.5	37.8
	Masters - thesis	23.8	34.5	10.0	4	33.8	38.5
	Masters - coursework		1.0	0.3	0	0.3	1
	TOTAL	52.3	65.3	20.3	12	72.6	77.3
TOTAL	PhD	231.9	267.5	196.3	209.6	428.2	477.1
	Masters - thesis	306.2	324.8	90.3	87.3	396.5	412.1
	Masters - coursework	115.5	122.1	12.2	19.6	127.7	141.7
	TOTAL	653.6	714.4	298.8	316.5	952.4	1030.9

NOTES: Fall term FTE = November 1 enrolment: FT+(PT*0.3)

¹ Architecture total is annualized FTE, not fall term FTE

* For 2005 coursework masters numbers include full cost recovery students

Two-year Comparison of Graduate Students:Faculty Ratio

November 1, FTE enrolment to tenured & tenure-stream faculty as of October 1

Department	Degree Type	2005	2006
Architecture ¹	PhD	0.0	0.0
	Masters - thesis	5.3	4.7
	Masters - coursework	0.0	0.0
	All research students	5.3	4.7
	All students	5.3	4.7
Centre for Business, Entrepreneurship & Technology	PhD	n/a	0.0
	Masters - thesis	n/a	0.0
	Masters - coursework	n/a	66.0
	All research students	n/a	0.0
	All students	n/a	66.0
Chemical Engineering	PhD	2.5	1.6
	Masters - thesis	1.4	1.4
	Masters - coursework	0.2	0.1
	All research students	3.9	4.2
	All students	4.1	4.3
Civil & Environmental Engineering	PhD	1.8	1.9
	Masters - thesis	1.9	2.0
	Masters - coursework	1.0	0.8
	All research students	3.7	3.9
	All students	4.7	4.7
Electrical & Computer Engineering	PhD	3.2	3.1
	Masters - thesis	1.7	1.7
	Masters - coursework	0.0	0.1
	All research students	4.9	4.9
	All students	5.0	5.0
Management Sciences	PhD	1.5	1.5
	Masters - thesis	1.5	1.2
	Masters - coursework	2.1	3.4
	All research students	3.0	2.7
	All students	6.6	6.0
Mechanical & Mechatronics Engineering	PhD	1.5	1.8
	Masters - thesis	1.7	1.6
	Masters - coursework	0.7	0.4
	All research students	3.2	3.4
	All students	3.9	3.8
Systems Design Engineering	PhD	2.0	1.9
	Masters - thesis	1.8	1.9
	Masters - coursework	0.0	0.1
	All research students	3.8	3.8
	All students	3.8	3.9

TOTAL	PhD	2.1	2.2
	Masters - thesis	1.9	1.9
	Masters - coursework	0.5	0.7
	All research students	4.0	4.1
	All students	4.6	4.7

NOTES: Fall term FTE = November 1 enrolment: FT+(PT*0.3)

¹ Architecture total is annualized FTE, not fall term FTE

Graduate Students:Staff Ratios, 2006

FTE staff paid from operating budget to Fall 2006 to FTE graduate students

Degree Program	Admin Staff	Tech Staff	Total Staff	FTE Stdts	Ratios		
					Students to Admin Staff	Students to Tech Staff	Students to Total Staff
Architecture	9	0.67	9.67	72.8	8.09	108.66	7.53
BET	2	0	2	33	16.50	n/a	16.50
Chemical	6	8	14	111.6	18.60	13.95	7.97
Civil & Environmental	6	8.5	14.5	151.2	25.20	17.79	10.43
Electrical & Computer	12.5	20	32.5	325.7	26.06	16.29	10.02
Management Sciences	3	0.4	3.4	96.6	n/a	n/a	n/a
Mechanical & Mechatronics	8	13.6	21.6	162.7	20.34	11.96	7.53
Systems Design	4	4	8	77.3	19.33	19.33	9.66
Support Units	31.17	20	51.17	0	n/a	n/a	n/a
TOTAL	81.67	75.17	156.84	1030.9	12.62	13.71	6.57

NOTES: Fall term FTE = November 1, 2006 enrolment: FT+(PT*0.3)
 Architecture total is annualized FTE for 2005/2006, not fall term FTE

Two-year Comparison of Graduate Students:Staff Ratios

FTE staff paid from operating budget to Fall to FTE graduate students

Degree Program	Grad Students to Admin Staff		Grad Students to Tech Staff		Grad Students to Total Staff	
	2005	2006	2005	2006	2005	2006
Architecture	12.8	8.1	20.7	108.7	7.9	7.5
BET	n/a	16.5	n/a	n/a	n/a	16.5
Chemical	17.9	18.6	14.3	14.0	8.0	8.0
Civil & Environmental	23.6	25.2	16.6	17.8	9.8	10.4
Electrical & Computer	26.1	26.1	15.0	16.3	9.5	10.0
Management Sciences	n/a	n/a	n/a	n/a	n/a	n/a
Mechanical & Mechatronics	19.5	20.3	11.5	12.0	7.2	7.5
Systems Design	16.1	19.3	18.2	19.3	8.5	9.7
TOTAL	13.4	12.6	12.0	13.7	6.3	6.6

NOTES: Fall term FTE = November 1 enrolment: FT+(PT*0.3)
 Architecture total is annualized FTE, not fall term FTE

APPENDIX D: Research

Total Sponsored Research Funds, 2005/06

Fiscal year 2005/2006, by department and source

Program	Grants	Contracts	Special Research	Total
Architecture	\$ 115,000	\$ 0	\$ 2,000	\$ 117,000
Chemical	\$ 4,071,000	\$ 867,000	\$ 21,000	\$ 4,959,000
Civil & Environmental	\$ 4,021,000	\$1,729,000	\$ 133,000	\$ 5,883,000
Electrical & Computer	\$ 9,895,000	\$2,000,000	\$ 0	\$11,895,000
Management Sciences	\$ 501,000	\$ 75,000	\$ 0	\$ 576,000
Mechanical & Mechatronics	\$ 4,470,000	\$2,264,000	\$ 0	\$ 6,734,000
Systems Design	\$ 1,747,000	\$ 267,000	\$ 0	\$ 2,014,000
Other	\$ 25,000	\$ 126,000	\$ 0	\$ 151,000
TOTAL	\$24,845,000	\$7,328,000	\$ 156,000	\$32,329,000

Two-year Comparison of Total Sponsored Research Funds

Fiscal year, by department and source (in thousands of dollars)

Program	Grants		Contracts		Special Research		Total	
	2004/5	2005/6	2004/5	2005/6	2004/5	2005/6	2004/5	2005/6
Architecture	\$228	\$115	\$ -	\$ -	\$7	\$2	\$235	\$117
Chemical	\$3,802	\$4,071	\$709	\$867	\$29	\$21	\$4,540	\$4,959
Civil & Environmental	\$3,313	\$4,021	\$1,698	\$1,729	\$168	\$133	\$5,179	\$5,883
Electrical & Computer	\$7,625	\$9,895	\$2,220	\$2,000	\$4	\$ -	\$9,849	\$11,895
Management Sciences	\$280	\$501	\$ -	\$75	\$ -	\$ -	\$280	\$576
Mechanical & Mechatronics	\$3,374	\$4,470	\$2,520	\$2,264	\$ -	\$ -	\$5,894	\$6,734
Systems Design	\$1,700	\$1,747	\$295	\$267	\$8	\$ -	\$2,003	\$2,014
Other		\$25		\$126		\$ -	\$ -	\$151
TOTAL	\$20,322	\$24,845	\$7,442	\$7,328	\$216	\$156	\$27,980	\$32,329

Total Contracts Awarded, 2005/06

Fiscal year 2005/2006, by department and source

Program	Federal	Provincial	Industry	Other	Total
Architecture	\$0	\$0	\$0	\$0	\$0
Chemical	\$87,000	\$277,000	\$487,000	\$16,000	\$867,000
Civil & Environmental	\$181,000	\$870,000	\$354,000	\$324,000	\$1,729,000
Electrical & Computer	\$0	\$1,376,000	\$624,000	\$0	\$2,000,000
Management Sciences	\$0	\$12,000	\$63,000	\$0	\$75,000
Mechanical & Mechatronics	\$191,000	\$1,548,000	\$474,000	\$51,000	\$2,264,000
Systems Design	\$0	\$192,000	\$54,000	\$21,000	\$267,000
Other	\$0	\$0	\$70,000	\$56,000	\$126,000
TOTAL	\$459,000	\$4,275,000	\$2,126,000	\$468,000	\$7,328,000

Total Grants Awarded, 2005/06

Fiscal year 2005/2006, by department and source

Program	Federal	Provincial	Industry	Other	Total
Architecture	\$89,000	\$0	\$0	\$26,000	\$115,000
Chemical	\$3,139,000	\$315,000	\$446,000	\$171,000	\$4,071,000
Civil & Environmental	\$2,515,000	\$493,000	\$469,000	\$544,000	\$4,021,000
Electrical & Computer	\$6,117,000	\$2,221,000	\$1,273,000	\$284,000	\$9,895,000
Management Sciences	\$431,000	\$43,000	\$0	\$27,000	\$501,000
Mechanical & Mechatronics	\$3,277,000	\$542,000	\$407,000	\$244,000	\$4,470,000
Systems Design	\$1,249,000	\$112,000	\$4,000	\$382,000	\$1,747,000
Other	\$0	\$0	\$19,000	\$6,000	\$25,000
TOTAL	\$16,817,000	\$3,726,000	\$2,618,000	\$1,684,000	\$24,845,000

Total NSERC Grants Awarded, 2005/06

Fiscal year 2005/2006, by department and type

Program	Discovery	RTI	Strategic	Industry	Other	Total
Architecture	\$0	\$0	\$0	\$0	\$0	\$0
Chemical	\$1,076,000	\$138,000	\$350,000	\$806,000	\$0	\$2,370,000
Civil & Environmental	\$899,000	\$128,000	\$136,000	\$480,000	\$0	\$1,643,000
Electrical & Computer	\$2,000,000	\$500,000	\$560,000	\$1,385,000	\$247,000	\$4,692,000
Management Sciences	\$195,000	\$22,000	\$0	\$0	\$0	\$217,000
Mechanical & Mechatronics	\$1,220,000	\$200,000	\$0	\$468,000	\$0	\$1,888,000
Systems Design	\$475,000	\$0	\$259,000	\$0	\$67,000	\$801,000
TOTAL	\$5,865,000	\$988,000	\$1,305,000	\$3,139,000	\$314,000	\$11,611,000

NOTES:

NSERC = National Sciences and Engineering Research Council of Canada

RTI = Research tools and instrumentation

Two-year Comparison of Total NSERC Grants Awarded

Fiscal year, by department and type (in thousands of dollars)

Program	Discovery		RTI		Strategic		Industry		Other		Total	
	2004/5	2005/6	2004/5	2005/6	2004/5	2005/6	2004/5	2005/6	2004/5	2005/6	2004/5	2005/6
Architecture	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Chemical	\$1,134	\$1,076	\$585	\$138	\$362	\$350	\$670	\$806	\$ -	\$ -	\$2,751	\$2,370
Civil & Environmental	\$911	\$899	\$189	\$128	\$ -	\$136	\$205	\$480	\$265	\$ -	\$1,570	\$1,643
Electrical & Computer	\$1,840	\$2,000	\$238	\$500	\$671	\$560	\$1,008	\$1,385	\$ -	\$247	\$3,757	\$4,692
Management Sciences	\$162	\$195	\$ -	\$22	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$162	\$217
Mechanical & Mechatronics	\$1,077	\$1,220	\$60	\$200	\$ -	\$ -	\$282	\$468	\$ -	\$ -	\$1,419	\$1,888
Systems Design	\$464	\$475	\$69	\$ -	\$238	\$259	\$ -	\$ -	\$26	\$67	\$797	\$801
TOTAL	\$5,588	\$5,865	\$1,141	\$988	\$1,271	\$1,305	\$2,165	\$3,139	\$291	\$314	\$10,456	\$11,611

NOTES:

NSERC = National Sciences and Engineering Research Council of Canada

RTI = Research tools and instrumentation

Total Tri-Council Grants Awarded, 2005/06

Fiscal year 2005/2006, by funding agency (CIHR, SSHRC, NSERC)

Program	CIHR	SSHRC	NSERC	Total
TOTAL	\$391,000	\$255,000	\$11,611,000	\$12,257,000

NOTES:

CIHR = Canadian Institutes of Health Research

SSHRC = Social Sciences and Humanities Research Council of Canada

NSERC = National Sciences and Engineering Research Council of Canada

Total Sponsored Research Funds:Faculty Ratio, 2005/06

Fiscal year 2005/2006 to tenured and tenure-stream faculty as of October 1, 2006

Department	Total Research Funding	Total Tenured & Tenure-Stream Faculty	Research Funding per Faculty
Architecture	\$117,000	15.5	\$7,548
BET	\$0	0.5	n/a
Chemical	\$4,959,000	26	\$190,731
Civil	\$5,883,000	32	\$183,844
Electrical & Computer	\$11,895,000	65	\$183,000
Management Sciences	\$576,000	16	\$36,000
Mechanical	\$6,734,000	43	\$156,605
Systems Design	\$2,014,000	20	\$100,700
Other Faculty Offices	\$151,000	0	n/a
TOTAL	\$32,329,000	\$218.0	\$148,298

NOTE: "Other Faculty Offices" includes all areas outside of academic departments (e.g. Dean's Office, Undergraduate Office, Engineering Computing, Machine Shop, etc.)

Total Sponsored Research Funds:Operating Budget Ratio, 2005/06

Fiscal year 2005/2006, by department

Department	Total Research Funding	Operating Budget	Research Funding to Operating Budget
Architecture	\$117,000	\$2,431,079	0.05
Chemical	\$4,959,000	\$5,639,099	0.88
Civil	\$5,883,000	\$5,277,329	1.11
Electrical & Computer	\$11,895,000	\$13,186,199	0.90
Management Sciences	\$576,000	\$2,527,669	0.23
Mechanical	\$6,734,000	\$7,947,113	0.85
Systems Design	\$2,014,000	\$3,705,864	0.54
Other Faculty Offices	\$151,000	\$10,713,811	n/a
TOTAL	\$32,329,000	\$51,428,163	0.63

NOTE: "Other Faculty Offices" includes all areas outside of academic departments (e.g. Dean's Office, Undergraduate Office, Engineering Computing, Machine Shop, etc.)

APPENDIX E: Dean's Advisory Council

Dean's Advisory Council Mandate

The Dean's Advisory Council consists of leaders from industry and academia to provide a valued outside perspective, furthering Waterloo Engineering in its mission of education, research and knowledge transfer.

Members are formally invited to membership by the Dean of Engineering for a one-year, renewable term and are drawn from a mix of alumni, industry and academic leaders. The Council, a bridge to the engineering and business community, will provide valuable advice to the Faculty on its plans as well as serve as ambassadors and advocates, communicating the Faculty's goals, programs and achievements. The Council will meet twice a year.

Dean's Advisory Council Membership

Tyseer Aboulnasr	Professor, School of Information Technology and Engineering, University of Ottawa
W. Douglas Beynon	President and CEO, Unisearch Associates Inc., Waterloo, Ontario
Catherine A. Booth	Senior Vice-President, Information Technology, Loblaw Companies Limited, Brampton, Ontario
Thomas A. Brzustowski	Professor in the Commercialization of Innovations, University of Ottawa
Savvas G. Chamberlain	Chief Executive Officer, DALSA Corp., Waterloo, Ontario
Arthur F. Church	President and CEO, Mancor Canada Inc., Oakville, Ontario
Rod Coutts	Chairman, Navcast Inc., Mississauga, Ontario
Anthony P. Franceschini	President and CEO, Stantec Inc., Edmonton, Alberta
Murray Gamble	President, The C3 Group, Breslau, Ontario
Frederick R. Grigsby	Senior Vice-President and Chief Information Officer, Canadian National Railway Company, Montreal, Quebec
Adrian Hartog	Senior VP & General Manager, Advanced Micro Devices (ADM) Inc., Markham, Ontario
Tom Jenkins	Executive Chairman and Chief Strategy Officer, Open Text Corp., Waterloo, Ontario
Ron J. Jutras	President & CEO, ATS Automation Tooling Systems Inc., Cambridge, Ontario
Jacques Lamarre	President and CEO, SNC-Lavalin Group Inc., Montreal, Quebec
Norman J. Lockington	Vice President Technology (retired), Dofasco Inc., Burlington, Ontario
Robert B. Magee	President and CEO, Woodbridge Foam Corp., Mississauga, Ontario
Kevin Murai	President and CEO, Ingram Micro Inc., Santa Ana, California
Michael Pascoe	President and CEO, Meriton Networks, Ottawa, Ontario
Paul B. Spafford	Vice Chairman, CIBC World Markets Inc., Toronto, Ontario
Ray Tanguay	President, Toyota Motor Manufacturing Canada Inc., Cambridge, Ontario
Glenn Turchan	Executive Vice-President, Conestoga Rovers & Associates, Waterloo, Ontario
Donald Walker	Co-CEO, Magna International Inc., Aurora, Ontario
Douglas T. Wright	Former President, UW and Founding Dean, UW Faculty of Engineering
Morden S. Yolles	Partner, Halcrow Yolles, Toronto, Ontario

APPENDIX F: Women in Engineering

Women in Engineering, 2006

(A) women in engineering disciplines

	% Women
First-Year Undergraduate Class	16.7%
All Undergraduate Students	17.0%
Undergraduate Degrees Awarded	21.8%
All Graduate Students	22.7%
Master's Degrees Awarded	25.8%
PhD Degrees Awarded	8.1%
Professors	12.0%

(B) women in architecture

	% Women
First-Year Undergraduate Class	47.7%
All Undergraduate Students	55.9%
Undergraduate Degrees Awarded	49.2%
All Graduate Students	50.7%
Master's Degrees Awarded	51.9%
Professors	24.0%

NOTES:

Undergraduate and graduate students per November 1, 2006 count date

Undergraduate students include students on official co-op work term

Graduate students include full- and part-time students

Faculty counts per October 1, 2006 count date

Faculty includes all regular faculty members; excludes research and visiting professors

Two-year Comparison of Women in Engineering

(A) women in engineering disciplines

	% Women	
	2005	2006
First-Year Undergraduate Class	15.0%	16.7%
All Undergraduate Students	18.0%	17.0%
Undergraduate Degrees Awarded	22.4%	21.8%
All Graduate Students	21.0%	22.7%
Master's Degrees Awarded	22.4%	25.8%
PhD Degrees Awarded	17.9%	8.1%
Professors	11.3%	12.0%

(B) women in architecture

	% Women	
	2005	2006
First-Year Undergraduate Class	55.0%	47.7%
All Undergraduate Students	58.0%	55.9%
Undergraduate Degrees Awarded	45.6%	49.2%
All Graduate Students	57.0%	50.7%
Master's Degrees Awarded	56.6%	51.9%
Professors	13.0%	24.0%

NOTES:

Undergraduate and graduate students per November 1 count date

Undergraduate students include students on official co-op work term

Graduate students include full- and part-time students

Faculty counts per October 1 count date

Faculty includes all regular faculty members; excludes research and visiting professors