

**THE UNIVERSITY OF BRITISH COLUMBIA
FACULTY OF APPLIED SCIENCE (ENGINEERING)**

STRATEGIC PLAN 2008

BACKGROUND

The Faculty of Applied Science (Engineering^{*}) at The University of British Columbia has been engaged in a strategic planning process since the Fall of 1997. This has been complementary to the University's overall visioning process led by former President Piper that resulted in the adoption of *Trek 2000* in October 1998 and *Trek 2010* in November 2004.

Strategic planning is a comprehensive process for determining what an organization should become and how it can best achieve that outcome. The process appraises the full potential of the organization and explicitly identifies the actions and resources required to achieve its goals. The Strategic Plan is a high-level reference document that, in the present case, includes a statement of our vision (desirable state), our mission (a definition of our “business”), our core values, our overall goals, a set of strategic initiatives that support the goals, and associated commentaries that amplify on each strategic initiative.

The Faculty's initial Strategic Plan was approved by the Faculty in November 1998, and has since been updated each year for endorsement at the Faculty's Fall meeting. The Plan has been instrumental in leading to a number of the Faculty's accomplishments over the last few years, including the introduction of new programs, enhancements to the learning environment, the development and implementation of research and hiring plans, stronger linkages with external partners, enhanced advocacy for the Faculty, and an expansion of the Faculty's physical infrastructure and resource base.

Strategic Plan 2004 incorporated a more major revision, taking account of the recommendations of the Report on the 2003 External Review of the Faculty, and a consultation process involving the Engineering Advisory Council, faculty members, and staff and student representatives. In light of this, the current plan, Strategic Plan 2007, and before it Strategic Plans 2005 and 2006, have been updated modestly each year but do not include any major revisions. The Faculty will continue to place a high priority on implementing the strategic initiatives that are contained in the Plan.

VISION

To be amongst the world's finest institutions of engineering education and research.

MISSION

To provide our students with an outstanding and innovative engineering education and to conduct leading-edge research that serves the people of British Columbia, Canada, and the world.

^{*} The School of Architecture and Landscape Architecture and the School of Nursing, which are within the Faculty of Applied Science, have undertaken related planning processes — this document relates to the engineering activities of the Faculty.

VALUES

As members of the Faculty, we are committed to our core values:

- Academic excellence
- Innovation
- Integrity and, ethical conduct and respect for the individual
- Social, environmental and economic responsibility

GOALS

- I. To provide an outstanding and innovative engineering education through a comprehensive and progressive range of academic programs that are responsive to society's needs.
- II. To conduct high-quality and leading-edge research, and to facilitate its application for the benefit of society.
- III. To recruit outstanding students, faculty and staff, and to foster their development and career goals.
- IV. To strengthen the Faculty's relationships with its partners and external communities.
- V. To enhance the Faculty's infrastructure, resources and support

STRATEGIC INITIATIVES

A set of strategic initiatives that support each of the five goals, not list in order of priority, are given below, together with brief commentary on each initiative.

GOAL I. To provide an outstanding and innovative engineering education through a comprehensive and progressive range of academic programs that are responsive to society's needs

1. Ensure that our BAsC curricula remain current and relevant, reflecting the role of engineers in society.

Our BAsC curricula are continuously assessed and updated in the light of the changing employment climate, accreditation requirements, program loads, resource limitations, and the need for improved business, computer and communication skills and for a better understanding of the role of engineers in society. As well, a shift towards a learner-centred education is occurring and may be used to address some of these changes.

2. Encourage well-rounded, broadening skills and competencies in our BAsC students.

We intend to place a greater emphasis on: developing meta-skills in our BAsC students (encouraging each of them to be a leader, communicator, team-player, global thinker, critical analyst, responsible professional, strategic thinker, ...), on research experiences and interdisciplinarity, and on increasing student awareness of sustainability and globalization issues. The new Centre for Professional Skills Development is intended to support this initiative.

3. Plan and implement the Faculty's contribution to the "Doubling the Opportunity" initiative.

The Province's "Doubling the Opportunity" initiative (DTO), "to double the number of graduates in computer science and electrical and computer engineering in five years", has entailed an expansion of both undergraduate and graduate student enrollments in electrical and computer engineering and related areas. This has provided a unique opportunity for increased activities in these areas and has required careful planning and implementation, including student admissions, enrollments, program development, faculty recruitment, capital and renovation projects, entry from the colleges, engineering co-op, teaching formats, sectioning and scheduling, and impact on non-DTO programs. The objectives of this initiative have largely been met, and it is drawing to a close.

4. Expand the Faculty's activities beyond the Point Grey campus, particularly at UBC Okanagan.

We need to place continued emphasis on our co-op and exchange programs, and on internationalization activities with respect to both undergraduate and graduate students. The Faculty is an active participant in UBC Okanagan, where the new School of Engineering was opened in 2005. The development of the Faculty at UBC Okanagan will continue to be a central focus of this initiative.

5. Encourage the use of new technologies in enhancing teaching and learning effectiveness and efficiency, including their application to distance education.

New technologies may be used in many ways to enhance teaching and learning and access to education, complementing the more traditional approaches to teaching and learning. Improved learning experiences may arise both directly through the use of such technologies, as well as through the ability to complement laboratory and field experiences, more flexible scheduling, the off-campus delivery of courses, and web-based courses. We envisage an increased use of computers in the classroom, and need to ensure that our facilities fully support this activity. A current focus of this initiative is the introduction of "laptop schemes" for our undergraduate students.

6. Implement ways of enhancing teaching efficiencies without compromising learning effectiveness.

In order to use our resources and our teaching complement wisely, there is a continuing need for improved teaching efficiencies, while maintaining established learning standards. Possible approaches include an increased use of courses for students in more than one program, a consolidation of the number of specialized low-enrollment programs and options that are offered, increased laboratory access (through "open labs"), alternative teaching formats, such as an expanded use of the summer term and short duration full-time courses, and an ongoing assessment of timetabling and scheduling issues.

GOAL II. To conduct high-quality and leading-edge research, and to facilitate its application for the benefit of society

7. Ensure research excellence by enhancing our research environment and articulating and guiding our research directions through faculty hiring.

Approaches to enhancing our research environment include the provision of adequate start-up research funds, securing improved benefits from University service units, upgrading the Faculty's research infrastructure, increasing its base of industrial support for research, developing research initiatives that attract external support, and enhancing our ability to attract the best graduate students and provide them with a rewarding experience. As well, the Faculty intends to provide resources for developing collaborative research initiatives involving groups of our researchers. Faculty renewal is perhaps the single most important factor influencing our research directions and will continue to be very significant over the next few years. New faculty should be hired, through the Engineering Departments, on the basis of the

Faculty's research and faculty hiring plan, that has set research priorities, emphasized our strengths, and identified areas of focus.

8. Promote the transfer of research results to practice.

Our technology transfer activities may be enhanced by working more closely with the University-Industry Liaison Office and focusing attention on issues such as intellectual property, the establishment of research contracts, research administration, incentives for faculty, and increasing faculty awareness of technology transfer structures. The Faculty has assured the adoption of more industry-friendly approaches to IP development, and will continue to work with the UILO towards this end. As well, the significant technology transfer occurring through other avenues, such as dissemination of research findings, contributions to codes of practice, graduate students entering the work force and so on, should be recognized and fostered.

9. Emphasize the Faculty's research presence in human health, particularly in biomedical engineering.

The Faculty has a considerable presence in areas relating to human health, including hazard mitigation, accident prevention, public health engineering, and biomedical engineering, and it benefits also from the presence of the School of Nursing in the Faculty. We intend to strengthen our interactions with the health faculties, emphasize flexibility and interdisciplinarity in our health research activities, create new programs in biomedical engineering, and enhance our biomedical engineering profile and activities.

GOAL III. To recruit outstanding students, faculty and staff, and to foster their development and career goals

10. Enhance the Faculty's approaches to the recruitment of outstanding undergraduate and graduate students, modifying admissions criteria and processes as necessary.

An essential element of the Faculty's reputation and success relates to its ability to recruit top calibre students, and thus active student recruitment is a high priority of the Faculty. It must maintain an active program that seeks out and attracts outstanding undergraduate and graduate students including female students, so that UBC will be Canada's university of choice for engineering students. Towards this end, we have appointed a Recruitment Officer who is developing and implementing a well-defined recruitment program. There is need for a continuing emphasis on transfer programs, an assessment of admissions criteria and processes for both undergraduate and graduate students, and enhanced funding packages for graduate students.

11. Ensure that the Faculty recruits and retains outstanding faculty who reflect its education and research priorities.

The Faculty must ensure that it attracts and retains faculty members who are outstanding and who fully reflect its education and research priorities. In this context, the Faculty's Hiring Plan outlines proactive approaches to the recruitment and retention of outstanding faculty; and identifies the priority disciplines, faculty positions and funding arrangements that need to be adopted. The importance of excellent teaching at the undergraduate level and the requirement of Professional Engineer status are continually emphasized. Also, the role of emeritus faculty in supporting the Faculty's education and research activities is being more explicitly acknowledged.

12. Provide a high level of support, mentoring and suitable professional development opportunities for faculty and staff.

In order to meet our education and research objectives, the Faculty needs to retain its faculty and staff, to create an environment that demonstrates its appreciation of them, and to support their professional development. These entail, for example, working towards improved conditions of employment, paying close attention to the concerns of both faculty and staff, and fostering an enhanced sense of community and

service within the Faculty. A particular focus will be on faculty mentoring with respect to new faculty orientation and to promotions and tenure considerations.

13. Facilitate a greater degree of gender balance in the Faculty.

Although educational and employment equity issues are wide ranging, a primary aspect for engineering relates to improving the gender balance in the Faculty, especially with respect to faculty and students. Presently, women make up less than a quarter of our students and less than a tenth of our faculty. These low numbers suggest that the engineering profession is not attracting nor benefiting from an adequate representation of women. There are various approaches that are being adopted to address this issue with respect to elementary and high school students, undergraduate students, graduate students and faculty members. A particular focus of the Faculty's efforts is on the recruitment of female faculty members and, through the Recruitment Officer, on programs that raise the profile of engineering as a potential career choice for talented high school female students.

GOAL IV. To strengthen the Faculty's relationships with its partners and external communities

14. Enhance partnerships with our external communities, including alumni, the profession, industry, governments, post-secondary institutions, high schools, and international partners.

Because of its applied and professional focus, the Faculty requires strong connections with its external communities. These connections directly affect the teaching, research and service activities of the Faculty: they influence the quality of our academic programs, the nature, extent and funding levels of our research, professional experiences of our faculty members, the learning experiences of our students, and the level of advocacy for the Faculty. A variety of mechanisms may be used to broaden and deepen these linkages, including industrial leaves for faculty, "reverse sabbaticals" (i.e. by industrial visitors attending the Faculty), increased involvement of adjunct faculty, increased collaboration on graduate research projects, greater collaboration on degree programs, greater outreach to high schools and colleges, an increased dialogue with governments, and the establishment of external advisory committees. Our relationship with the Association of Professional Engineers and Geoscientists of BC is of particular value and provides an essential link with the professional engineering community.

15. Encourage close associations and high levels of collaboration between Departments and with other Faculties.

There is a continuing need to engage our faculty members in closer interactions across departments, with other Faculties, and with the University overall, with respect to both teaching and research. Aspects of particular importance include service courses, undergraduate and graduate interdisciplinary study and projects, and interdisciplinary and multi-disciplinary research. Approaches to foster such interactions need to be encouraged and implemented.

16. Continue working towards enhancing the Faculty's public recognition and profile.

An important aspect of strengthening our linkages relates to enhancing the Faculty's public recognition. The Faculty needs to be proactive in its public profile activities, for example, by the timely publication of quality print and web-based materials which disseminate its activities and by increasing nominations of faculty members for honours and awards, and developing approaches that ensure strong external support for the Faculty's activities.

17. Enhance the provision of continuing education for practicing engineers through collaboration with the Division of Continuing Studies.

Continuing education for practicing engineers is an important aspect of the Faculty's activities. In this context, the collaboration with the University's Division of Continuing Studies provides a significant

opportunity for the development and provision of certificate and diploma programs and the enhanced provision of continuing education for engineers.

GOAL V. To enhance the Faculty's infrastructure, resources and support

18. Ensure completion of the Faculty's capital and renovation projects.

Capital projects underway or recently completed include the new Engineering Building at UBC Okanagan, the Chemical and Biological Engineering Building, the new Electrical and Computer Engineering Building, and the ICICS/CS expansion project. . As well, a number of renovation projects are underway or have been recently completed. Significant new study, learning and project space for BAsC students is also intended.

19. Give priority to the Faculty's fiscal strategy, which includes an active fundraising campaign, the pursuit of other new funding opportunities, and the sound management of the Faculty's resources.

The Faculty continues to work towards securing a sound and sustainable financial base. In this context, the Faculty has placed a high priority on pursuing its fundraising campaign, and other initiatives that attract stable support, and it needs to ensure that it manages its resources wisely. As well, we will continue to advocate for an explicit recognition of the relationship between enrollments, space and funding allocations.

20. Develop and report on performance indicators relating to the Faculty's activities.

In support of the Faculty's advocacy and decision-making activities, the Faculty has been developing and utilizing performance indicators and benchmarks relating to the full scope of its programs and education activities, its faculty, staff and students, its standing, and its resources. The process will include multi-year trends, surveys of graduates, and benchmarks against other universities. It is expected that this activity will assist greatly in the Faculty's advocacy, both within the University and externally, and will provide a useful management tool to keep track of the key parameters that reflect our performance.

21. Continue working towards enhancing the University's administrative support for the Faculty.

The Faculty has seen some notable improvements in some areas of University support for the Faculty, including financial systems, purchasing, human resources, the management of capital projects, and classroom quality. However, there is a continuing need to urge improvements in other areas of support, such as classroom access, housing administration, budgeting processes, plant maintenance, and renovations — since difficulties in these areas can have a negative impact on our ability to deliver effectively our programs and to conduct leading research. Working with the University to address these issues remains a priority.