Internal Academic Review 2008-2009

Department of Chemical Engineering
Internal Academic Review Committee Report to Senate

The Internal Academic Review (IAR) of the Department of Chemical Engineering is now complete. The Internal Academic Review Committee (IARC) has taken into consideration all of the submissions related to the IAR of the Department of Chemical Engineering and respectfully submits the following report. The IARC Report to Senate is intended to supplement the findings of the attached Review Team Report and to provide a mechanism for the Head of the Department of Chemical Engineering and the Dean of the Faculty of Applied Science to jointly report on the progress in addressing the Review Team recommendations (please see the "Outcomes" section of this report).

Summary of the Internal Academic Review of the Department of Chemical Engineering
The IARC acknowledges the Department of Chemical Engineering as a strong department that provides high quality teaching, innovative scholarship and research and exemplary service to the University, profession and the greater community. The Department should be commended for its collegial and supportive atmosphere, its dedicated faculty and support staff and the solid leadership provided by its Head.

The Department of Chemical Engineering should be congratulated for encouraging its graduate students to establish a graduate student club by offering financial assistance. Such initiatives contribute to the positive, supportive and collegial environment that is one of the distinguishing features of the Department. The IARC recognizes the Department's actions to address the recommendation that core engineering courses be introduced for graduate students.

The IARC shares the External Consultants', Review Team's and Department Head's concerns about the poor ventilation in Dupuis Hall. The IARC had made the Director of Environmental Health and Safety aware of the situation.

In collaboration with the Faculty of Engineering and Applied Science, the IARC congratulates the Department of Chemical Engineering on developing a departmental strategic plan that encapsulates the Faculty's sustainability objectives.

The IARC recognizes the Department's significant efforts in increasing the representation of women faculty and encourages the Department to continue to pay special attention to diversity issues when hiring new faculty.

The IARC encourages the Department of Chemical Engineering to continue to address the External Consultants' and Review Team's concerns about an unbalanced distribution of Teaching Assistants (TAs) duties. Confirmation has been received from the Head that alternative approaches are being explored to ensure a more efficient use of available TA resources and to respond to increased enrolment.

The IARC recognizes the Department of Chemical Engineering as a strong, vibrant department despite the current constraints of space and resources. The IARC fully supports the Department in its efforts to

balance exceptional teaching, exceptional research and service while addressing the recommendations of the IAR reports, in a concerted effort to maintain a high level of performance and success.

Outcomes of the Internal Academic Review of the
Department of Chemical Engineering
Joint response submitted by the
Dean of the Faculty of Engineering and Applied Science and the
Head of the Department of Chemical Engineering

The Dean of the Faculty of Engineering and Applied Science and the Head of the Department of Chemical Engineering welcome the positive review of the department's activities by the IARC. We have set several processes in motion to address the specific recommendations of the committee.

Outcomes – Recommendations and Actions:

1. **Development of an up-to-date Strategic Plan** – the Chemical Engineering department has had a strategic planning initiative underway since May 2008, with strategic planning follow-up retreats held in May and December 2008. A Chemical Engineering Strategic Plan has been developed and is being implemented. In order to ensure timely implementation of the planning goals, we have mini-retreat progress update sessions every 6 months. Most of the goals identified have been achieved, or are well on their way to being attained. Priority goals are reviewed and updated as necessary at the progress review sessions. This strategic plan has been developed to fit with Applied Science Strategic Framework and its emphasis on sustainability. In particular, the emphasis is on developing responsible solutions for future generations.

2. **Rejuvenation of the department seminar series** – the Chemical Engineering department seminar series was rejuvenated beginning with the 2009/10 academic year. This was done with the extensive collaboration of the graduate students through the newly formed Chemical Engineering Graduate Student Association (CEGSA). In addition, finding external donor funding to support the seminar series has been set as an advancement goal for the department. The department series for 2009/10 was successful, and we are continuing with the rejuvenated series.

3. **Strategy for managing department equipment** – we agree that a coordinated strategy for managing department equipment needs to be developed, and have initiated a planning process to develop such a strategy. Our Laboratory/Projects Coordinator completed a comprehensive review of our undergraduate laboratory equipment against pedagogical needs and physical state of the equipment in Spring 2008, and this is being used as a working document to track our undergraduate laboratory experiments and equipment.

4. **Strategy for managing teaching and research space** – as the IAR committee notes, this will be a considerable issue requiring coordination with other departments and the Dean of Applied Science.

Within the department, we have done the following: a) established a space committee with representation from each research group in the department, and faculty and staff, to make recommendations on space allocation, identify department needs, and formulate a space allocation policy; b) commissioned a space planning review and report with ECS consultants, with Brian Barron as the consultant; and c) received and reviewed the final space plan for Chemical Engineering produced by ECS. This report assesses the current space needs and utilization in the department, and makes projections for future needs with recommendations for developing additional space within Dupuis Hall. The report considers research centres affiliated with the Department of Chemical Engineering, including the Fuel Cell Research Centre, the Human Mobility Research Centre, and the space in the Biosciences Complex occupied by Chemical Engineering researchers. The ECS report has been used to guide renovations that we currently have underway.

The Chemical Engineering department has also been working closely with the Faculty of Engineering and Applied Science in coordinating the use of existing space across departments, and in planning for a new Applied Science building being proposed. The Faculty has been providing helpful support in trying to address space needs. Control of large-scale teaching space (classrooms, Dupuis Auditorium) is a central function beyond our control. However, we continue to review the space that we do use for smaller group teaching and meetings to ensure that it meets and tracks current and future needs.

Finally, it is worth noting that a number of our competitor Chemical Engineering departments in Canada have new buildings completed or under construction (e.g., UBC, U of Alberta, McGill, Waterloo), so there is significant pressure to upgrade our facilities to remain competitive.

5. **Ventilation** – we have been working very closely with Physical Plant Services (PPS) to address the poor state of the ventilation system in Dupuis Hall. This continues to be the major issue affecting the current state of the workplace in Dupuis Hall, and the major constraint on future renovations. Renovations to provide, for example, additional graduate student office space are increasingly fruitless because while it is possible to renovate the rooms to provide effective and pleasant furnishings, the ventilation to the rooms barely meets acceptable levels making it unpleasant to work in these offices. In addition, there are continuing concerns about whether the ventilation system is providing sufficient air to ensure safe operation of our fumehoods, and air supply is a continuing constraint on our ability to add badly needed additional fumehoods. We have passed up an opportunity to bring in an external hire for a CRC Tier I position associated with ARIP in part because we could not provide sufficient laboratory space.

The ventilation system also has a number of design flaws, the most notable of which is the fact that both the undergraduate laboratory and main office are on the main air circuit. Fortunately, the air flows from the office to the laboratory, but this design raises concerns.

It is our understanding from a number of conversations that renovating/replacing the Dupuis Hall ventilation system has been identified as a major priority at the university level, and has been included in requests for stimulus project funding at the federal and provincial levels. We agree with the IAR team that this is an evident health issue, and we work regularly with PPS to see how we can improve the air

flow to the basement graduate offices in particular. To date, no progress has been made on the overall ventilation system front in Dupuis Hall.

6. **Graduate core courses** – over the past 6 months, the Graduate Coordinator and Graduate Assistant have met with each of the OCGS-accredited research groups to establish "priority core" courses for each field. Priority core courses will be offered on a continuing and regular basis, and supplementary courses have been identified that will offered on a periodic basis.

7. **Access to technical services** – a review of how scheduling and provision of technical services has been initiated between the Head and Department Administrator, with the goal of introducing a scheduling mechanism to track and allocate time.

8. **Graduate student club** – in January 2009, the graduate students in Chemical Engineering were approached and invited to form a graduate student club, with financial support from the department and fundraising amongst the graduate students to help fund various activities. From the start, there has been an overwhelmingly enthusiastic and strong interest from the graduate students, and we are pleased to report that they have formed the Chemical Engineering Graduate Student Association (CEGSA), with a constitution and elected officials. A range of activities have been held to date including sports days, coffee houses, and BBQs. CEGSA played a key role in bringing graduate student input to the revamping of the department seminar series, in the form of a detailed proposal of potential speakers which was very helpful in identifying potential speakers. CEGSA is to be commended for the enthusiasm and leadership that they have provided.

9. **Second-year design engineering course** – a second-year engineering design course is being developed for the Chemical Engineering and Engineering Chemistry programs under the auspices of the Faculty of Engineering and Applied Science Dean's Committee on Renewal of the Curriculum (DCRC). The second-year course is part of the professional spine of courses being introduced into curricula for all programs in Engineering and Applied Science, and will be implemented in the 2011/12 academic session.

10. **TEAM program** – we are pleased that TEAM is seen by the IARC as a definite asset to the department, and we agree that it is an important asset. Many see it as a flagship program for the department. We recently received renewed support from Shell Canada in the amount of $400K, and we are moving forward on an advancement plan to raise money to support TEAM or a TEAM-like program on a permanent endowed basis for design in the curriculum. The continuing challenge during the economic downturn is to find clients and projects to accommodate the large numbers of students in TEAM, however we are pleased to report that we have been successful in finding client. Finally, we continue to expand the inter-disciplinary nature of TEAM and have participants from many different disciplines: Mechanical Engineering, Civil Engineering, Law, School of Environmental Studies, Commerce, and Biology.

11. **Strengthening community amongst faculty** – we agree that we need to continue to strengthen the sense of community amongst faculty, and this will be pursued through a series of social gatherings and regular workshop sessions.