

## **Review of Graduate Studies at the University of Waterloo**

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### **1. Preamble**

In the spring, I was invited by Provost Amit Chakma to review graduate studies at the University of Waterloo. The terms of reference for the review and some very helpful background information prepared by the Provost are included as Appendix I. I visited the University on April 29 and 30, 2002, and spent a day and a half meeting with relevant individuals and groups. The schedule for the visit is attached as Appendix II. Everyone I met with was extremely helpful, generous with their time, and open to sharing their views and ideas with me. Some also provided me with additional written material in the form of reports, brochures, calendars, etc. All-in-all, I enjoyed my visit, meeting with enthusiastic faculty, students and administrators, thinking about the challenges and opportunities facing the University as it considers strengthening its graduate studies, and finally putting together a number of ideas and recommendations in this report. It is my sincere hope that the report and the eighteen recommendations it contains would prove helpful to the University.

### **2. Introduction**

Known for its innovation in undergraduate education and for research that has resulted in many successful spin-off companies, the University of Waterloo is one of Canada's major research universities. It appears, however, that its success in undergraduate education, with Canada's largest co-op program, has eclipsed its graduate program, rendering it less prominent, at least in size, than befits a research University of Waterloo's stature. In 2001-02, enrolment in graduate programs stood at 1858 FTE out of a total enrolment of approximately 18,000 FTE. At about 10% of total enrolment, UW's graduate operation is smaller than that at comparable research universities in Canada where the proportion would be in the range 15 to 20%.

The issue of the size of graduate enrolment was recognized in the University's 1997 planning document, *Building on Accomplishment*, and a number of recommendations were made to increase graduate enrolment and to integrate graduate education more closely with the other elements in the University's mission, namely research and external interactions. It appears that the University has been successful in at least the first of these two objectives: the decline in graduate FTE enrolment from the peak reached in 1993-94 was reversed in 1998-

99 and enrolment has since steadily climbed, reaching in 2001-02 a level approximately equal to that of 1993-94.

Notwithstanding the increases in graduate enrolment in recent years, the University wishes at this time to take a closer look at its graduate operation: enrolment, programs, services, and administration, as well as on the current external context, to determine a course of action for the next few years. This report aims to help in this direction.

It is the reviewer's view that this examination of graduate studies at UW is a very timely initiative. Like all other universities in Ontario, Waterloo is about to expand its undergraduate enrolment substantially. Thus, unless graduate enrolment were increased proportionately, the relative size of the graduate enterprise would decline and the profile of graduate studies would shrink even further. At the same time, the increased undergraduate enrolment will require an increase in the number of teaching assistants, traditionally graduate students. Also, the new faculty who will be hired to teach the increased numbers of undergraduates will expect to have excellent graduate students to work with. Finally, like other major research universities, Waterloo has an obligation to increase its output of Ph.D. graduates in order to help provide the faculty that will be needed in large numbers over the next decade.

At the Federal level, the recently released paper on innovation calls for an increase in graduate enrolment in Canadian universities by an average of 5% per year through to 2010; a cumulative increase of about 40%. Assuming that other universities answer this call positively, and indications are they will, Waterloo's graduate enrolment will have to increase by the same percentage if it is to retain its national share and remain a major supplier of highly qualified graduates that are needed for the knowledge-based economy. It should also be noted that the federal innovation paper speaks of encouraging co-op graduate education which, as the Provost points out in his background remarks, presents UW with a unique opportunity.

Thus, it seems clear that there is demand for expanding graduate enrolment both from within the University and from outside. Furthermore, as part of the "double cohort expansion", the Ontario government has agreed to fund some expansion in graduate enrolment. Equally positive is the Federal government's indication that it intends to double the number of scholarships and fellowships awarded by the granting councils.

As a final point on the external environment, it should be mentioned that currently the competition for excellent graduate students nationally and internationally is fierce. To attract the best, most major universities in the US and some in Canada now guarantee every doctoral student a minimum level of funding for a period of four to five years.

### **3. Findings in Brief**

As mentioned above, the university's planning document of record recognizes the need for strengthening graduate studies and expanding graduate enrolment. The current central administration of the university, as represented by the President and the Provost, share this goal, and indeed the mere fact that this review is taking place is an affirmation of this ambition. Furthermore, most of those I talked to were enthusiastic about the prospect of an expanded graduate enterprise, provided of course that quality is maintained or even enhanced. However, this reviewer detected a widely held perception that graduate studies is not a priority at UW. I repeatedly heard statements of the sort: "there is a lack of focus on graduate studies"; "We need to raise the profile of graduate studies"; "Co-op has been a barrier to the full development of graduate studies". These views were shared by the leadership of Graduate Studies. While the Office of Graduate Studies appeared to be lean and well managed, the leadership were frustrated by what they perceived to be lack of clout, insufficient budget, and low profile. The graduate students with whom I met indicated their appreciation of the high quality education they were receiving but again raised the issue of the low profile of graduate studies.

The challenge then is to capitalize on the favourable external climate and the internal will and enthusiasm by taking concrete steps that will change the perception that at UW graduate studies takes a back seat to undergraduate education. The following set of recommendations taken together should in my view go a long way to achieving the desired result.

### **4. Graduate Studies as a University Priority** **Recommendation 1**

**As the first step toward raising the profile of graduate studies at UW, the Provost, perhaps in responding to this review, should declare graduate studies a university priority and outline measures by which this high-priority status would be manifested. These would include unveiling a framework for undertaking a graduate enrolment planning exercise (Recommendations 2 and 3) implementing the administrative changes in Recommendation 5.**

### **5. Graduate Enrolment Planning** **Recommendation 2**

**The University should develop a plan for expanding graduate enrolment to a level commensurate with UW's status as a leading research university. It should aim for an increase, over an appropriate number of years, say, eight, of 80 to 100%; the precise numbers to be determined through a rigorous academic planning process (Recommendation 3).**

### **Recommendation 3**

**Every academic department should engage in an academic planning process to determine the optimal number of graduate students it wishes to enroll. In turn, each Faculty should develop a graduate enrolment plan complete with resource implications and should reach an agreement with the Provost on the plan, the resources required and where they would come from, and an appropriate set of benchmarks to measure progress in implementing the plan.**

A detailed graduate enrolment plan must take into account factors such as availability of qualified supervisors, availability of space and other facilities, availability of adequate funding for students, and perhaps most importantly, the level of demand from excellent candidates. There is, of course, no point in expansion unless the student quality is maintained or even improved. Ideally, the only limitation on the number of graduate students should be the supervisory capacity. Finally, this reviewer firmly believes that every newly hired faculty member should be expected, and should expect as a matter of right, to supervise an appropriate number of graduate students.

### **Recommendation 4**

**The performance of an academic Dept. in graduate studies and in particular in implementing its graduate enrolment plan should figure prominently in the normal review undertaken periodically of academic units. It should also be a component in the performance reviews of Dept. Chairs and Deans.**

## **6. Administrative Structure**

Mention was made earlier of the frustration felt by the Dean of Graduate Studies and his colleagues regarding what they perceive as lack of clout. To describe the problem in my own words: UW is a highly decentralized university with most of the budget and budget authority already in the operating Faculties. The Dean of Graduate Studies, although accorded the same rights and privileges as the other Deans, the fact that he does not control a significant budget limits his ability to cause things to happen (and, after all, all of us who take on academic administrative positions, do so in order to make positive change). Furthermore, the Dean of Graduate Studies, being one of seven Deans, does not feel that he has the authority (and probably does not, in fact, have it) to make changes in graduate studies within the Faculties, e.g. make changes in funding of graduate students.

Being familiar with the administration of graduate studies in a number of other universities I have to say that I understand and am sympathetic to the problems of

graduate deans. I do not believe, however, that the problem we are trying to solve, namely enhancing the profile of graduate studies as a step toward strengthening graduate work, can be solved by turning the Office of Graduate Studies into a School of Graduate Studies, as has been suggested. Furthermore, I do believe that the budgets for delivering graduate programs and for funding graduate students should flow in the usual way, namely from Provost to operating Deans, that is, not through the Dean of Graduate Studies. Having said that I believe that the University of Waterloo can make a number of mostly operational changes that would go a long way to improving the leadership and administration of graduate studies.

First of all, it has to be recognized that the position of Dean of Graduate Studies is different from that of the Dean of one of the six Faculties. The Dean of Graduate Studies has responsibility for graduate studies across the entire university. Thus he or she should have authority commensurate with this level of responsibility. Such authority should be derived from that of the Provost, and this can be done easily by involving the Dean in the Provost's inner-most circle. Thus, I am advocating that the Dean of Graduate Studies should be regarded as a member of the senior central administration and as a partner to the Provost in planning for graduate studies. His/her views should be sought on every issue relating to graduate studies including the allocation of resources to the operating Faculties for graduate programs, as well as graduate student funding. This modified role for the Dean of Graduate Studies can be entrenched by giving the Dean the additional title of, say, Vice-Provost. This will clearly signal that the position Dean of Graduate Studies is indeed different from that of the Dean of a Faculty and furthermore that the Dean of Graduate Studies has a university-wide mandate, and thirdly that in his/her dealings with the operating Dean, the Dean of Graduate Studies does so with the authority of the Provost. This action, coupled with declaring Graduate Studies a university priority (Recommendation 1) and putting in place a planning process for the expansion and strengthening of graduate studies (Recommendations 2 and 3) will go a long way toward raising the profile of graduate studies.

### **Recommendation 5**

**The current structure for administering graduate studies should be retained but measures should be taken to make it function better:**

- 5.1 The Dean of Graduate Studies should work much more closely with the Provost, functioning in effect as a Vice-Provost, and given this or a similarly appropriate title, thereby having the authority of the Provost in dealings with Faculty Deans. He/she should participate fully with the Provost and his group in academic planning for the university as a whole, giving input on all matters including resource allocations.**

- 5.2 The Dean of Graduate Studies should be the senior University Officer responsible for developing policies on graduate student funding and ensuring that these policies are implemented. Whenever necessary, it should be the Dean who decides on the allocation of internal funding required to implement the minimum guarantee (Recommendation...), again doing so with the authority of the Provost.**
- 5.3 The Dean of Graduate Studies should work in close partnership with the Vice-President, Research, on such important issues as advocacy for increased external funding of graduate students, and integrating graduate studies much more closely with research. To achieve the latter objective, the VP-Research should be asked for input into the graduate enrolment plans of the Departments, thus ensuring that the research base necessary to undertake graduate studies is in place and of sufficient depth.**

As a related note, an important subject for the collaboration between the Dean of Graduate Studies and the Vice-President, Research, is the development of new and innovative interdisciplinary graduate programs. We shall return to this point later on in the report.

- 5.4 The current structure of having an Associate Dean, Graduate Studies and Research in each Faculty is excellent and should be retained and put to work more intensively. Working individually within their own faculties and as a group, the Associate Deans can play a major role in bringing about the changes recommended in this report.**

## **7. The Office of Graduate Studies**

The Associate Dean of Graduate Studies and the Director of Graduate Studies shared with me a great deal of information on the functions and organization of the office as well as on plans to re-organize the office. They had in mind a number of excellent initiatives such as the development of an on-line application for admission, and a recruitment strategy for graduate students. They indicated that their budget is insufficient to undertake such initiatives or to appropriately support expansion.

Although I was favourably impressed with what I saw and heard and believe that the office and its staff are working very hard and are providing a valuable service to the university (as confirmed to me in discussions with others) I am in no position to comment on the office organization or on its budget. Rather, I would recommend the development of a plan for the office, as follows:

## **Recommendation 6**

**The Dean of Graduate Studies should be asked to develop a comprehensive plan for the services (current and future) provided by the office and the resources needed to deliver these services, keeping in mind that whatever new resources will be available to support the administration of the expanded enrolment will in all likelihood be meagre. Such a plan should carefully consider and negotiate the various interfaces in service delivery between the office and other units such as: the Faculties and the Academic Departments, the Registrar's Office, Financial Services, and the Office of Institutional Research. The plan should be presented to the Provost who will determine through discussions with others and most importantly the Faculty Deans, the need for the various services and ultimately decide on allocating the additional resources required to implement the final version of an agreed-upon plan.**

Perhaps a few words of clarification about the interfaces mentioned in this recommendation are in order. First, I believe that the Office of Graduate Studies should interpret its mandate as providing services to all of those involved in graduate studies. If a particular service is not required or sufficiently valued by its recipient constituency it should not be provided. As always, there will be areas where it is not entirely clear who is best to provide a particular service and to do so most efficiently. The most obvious example is in processing admission applications. Here, the question should be about the division of labour between the Department and the Office. In this example, the cost of duplication is not just a monetary one but may result in delaying action to the point that an excellent potential student goes somewhere else.

Another example is recruiting of graduate students. Here, the Department the Office, and the Recruitment Group in the Registrar's Office can each play a role; a complex interface that has to be negotiated carefully and a process as optimum as possible devised.

Finally, we note that the Associate Deans, Graduate Studies and Research can play a valuable role in the development of this plan.

## **8. Graduate Student Funding**

Perhaps the most important development in the last few years in graduate studies in North America has been the adoption of a guaranteed minimum funding package for all students enrolled in doctoral programs. Many American schools have had this practice in place for a long time; however, the last two or three years saw these funding packages enhanced and extended to five years (as opposed to the customary four). Some Canadian universities have adopted a

similar system, in particular Toronto and more recently Western. Others are moving in this direction.

The advantages of a multi-year guaranteed minimum funding are many. Perhaps most importantly it allows students to concentrate on their studies and thus complete their program in a timely fashion.

Funding packages are made up of funding from a wide variety of sources, both external and internal and include teaching and research assistantships. Designing and implementing such a system has to be done carefully so as not to reduce the incentive for students to apply for external funding. Similarly, the design has to ensure that principal investigators do not reduce their support for graduate students on the assumption that the shortfall would be made up from the university's operating funds. An essential element for the success of a system of minimum guaranteed funding is an agreed upon graduate enrolment plan for each academic unit. Finally, it should be obvious that inherent in the establishment of such a system is that the university would subsidize graduate students in the Arts to a greater extent than to those in the Sciences or Engineering. However, cross subsidies of this sort are inherent in many of the functions of a university and cross subsidization is indeed an important principle in the operation of a university.

### **Recommendation 7**

**The university should adopt a policy of funding every doctoral-stream graduate student for five years at a minimum specified level. This minimum level of funding should be expressed as tuition fees plus a sum for living expenses, and would be assembled from multiple sources, both external and internal, and include teaching and research assistantships. To accommodate historical differences in funding and to respond to severe competitive pressures, there can be two levels for the guaranteed minimum, one for Arts, Applied Health Sciences and (maybe?) Environmental Sciences, and another, say \$2,000 to 3,000 higher, for Engineering, Mathematics and Science.**

### **9. International Students**

The data I looked at and the information I was given would indicate that the proportion of graduate students who are international at UW is rather low. If this indeed is the case, the University of Waterloo would be missing out on an important source of talent. This reviewer firmly believes that unlike undergraduate programs where it could be argued that the need for international students is not critical, for a university to have a first-rate graduate program it should avail itself of the best possible students irrespective of where they happen to be in the entire world. American schools have long recognized this principle and have benefited a great deal from its implementation. I should, of course, add that I am not advocating filling graduate programs with international students or

even that the majority of students would be international; rather, one is calling for having a healthy proportion of outstanding international students. To do that, however, the University has to work to remove the barriers to international student enrolment and indeed should take proactive measures to recruit outstanding international students.

### **Recommendation 8**

**The University should carefully examine the level of tuition fees for international graduate students to ensure that UW is competitive with other universities in Ontario and Canada in attracting the best graduate students from the entire world. If the fees are found to be relatively high, they should either be lowered or, alternatively, absorbed in the guaranteed funding packages.**

### **Recommendation 9**

**In developing their plans for graduate enrolment, the academic departments should give serious consideration to the proportion of their enrolment that should be international. In turn, each Faculty and the University as a whole should develop multi-year targets for international graduate student enrolment. The University should develop a plan to facilitate the recruitment, enrolment and support of international graduate students. Such a plan should consider issues of communication and marketing, tuition-fee level (see Recommendation 8), expertise in assessing the qualifications of foreign applicants, help with obtaining the necessary visas and work permits for spouses, support in the development of the required competency in the English language, housing, etc.**

## **10. Programs**

In the area of programs we make four recommendations which should be self explanatory:

### **Recommendation 10**

**As a goal to be reached over time, every academic unit should participate in graduate studies in some way. In areas lacking critical mass, collaboration with other units within the University or at neighbouring universities should be pursued. Every newly hired faculty member should be expected, and should expect as a matter of right, to participate in graduate studies.**

### **Recommendation 11**

**The University should encourage the development of professional masters programs, in a variety of formats and modes of delivery, as a means of**

providing valuable service to the community as well as generating revenue. However, this should be pursued only if it fits with the academic mission and goals of the offering unit.

#### **Recommendation 12**

The University of Waterloo is uniquely positioned to mount graduate co-op programs. The initiatives already underway, especially in the Faculty of Arts, should be supported and other Faculties should be encouraged to pursue this option.

#### **Recommendation 13**

Working with the Vice-President, Research, to whom the interdisciplinary research centres report, the Dean of Graduate Studies should establish a process for fostering the development of innovative interdisciplinary graduate programs.

### **11. Student Services**

In the very helpful meeting I had with student leaders they focused on three main issues, student funding (Recommendation 7), housing and career services.

#### **Recommendation 14**

**As a matter of urgency, the University should develop a plan for significantly increasing the number of residence spaces available for graduate students.**

As a side note we observe that the promise of a residence room can be a powerful tool in the recruitment of outstanding graduate students.

#### **Recommendation 15**

**The University should ensure that the Career Services unit devotes sufficient resources to addressing the special needs of graduate students.**

### **12. Other Issues**

#### **Recommendation 16**

The University should ensure that the double-cohort expansion does not result in graduate students working inordinately longer hours as teaching assistants. It should also assure graduate students that this would not be the case.

### **Recommendation 17**

Although post-doctoral fellows (PDFs) can be more productive research workers than graduate students, Departments especially in the sciences should ensure that educating graduate students in sufficient numbers takes precedence over hiring post-doctoral fellows. The issue of the balance between the number of graduate students and PDFs in each Department should be explicitly addressed and clear policies formulated.

### **Recommendation 18**

If it has not already done so, the University should develop policies on the engagement of PDFs, addressing such issues as the minimum level of stipend and the maximum length of tenure. While the Faculty Deans should have the responsibility for implementing the policies, the Office of Graduate Studies can take on the task of registering the PDFs and providing them with basic services.

### **13. Concluding Remark**

I conclude by re-iterating my appreciation to all those who helped in the conduct of this review. Hopefully the recommendations presented would prove useful to the University as it moves forward with expanding and strengthening graduate studies. For convenience, a listing of the recommendations is given below.

### **14. List of Recommendations**

- 1. As the first step toward raising the profile of graduate studies at UW, the Provost, perhaps in responding to this review, should declare graduate studies a university priority and outline measures by which this high-priority status would be manifested. These would include unveiling a framework for undertaking a graduate enrolment planning exercise (Recommendations 2 and 3) implementing the administrative changes in Recommendation 5.**
- 2. The University should develop a plan for expanding graduate enrolment to a level commensurate with UW's status as a leading research university. It should aim for an increase, over an appropriate number of years, say, eight, of 80 to 100%; the precise numbers to be determined through a rigorous academic planning process (Recommendation 3).**
- 3. Every academic department should engage in an academic planning process to determine the optimal number of graduate students it wishes to enroll. In turn, each Faculty should develop a graduate enrolment plan complete with resource implications and should reach an agreement with the Provost on the plan, the resources required and where they would come from, and an**

- appropriate set of benchmarks to measure progress in implementing the plan.
4. **The performance of an academic Dept. in graduate studies and in particular in implementing its graduate enrolment plan should figure prominently in the normal review undertaken periodically of academic units. It should also be a component in the performance reviews of Dept. Chairs and Deans.**
  5. **The current structure for administering graduate studies should be retained but measures should be taken to make it function better:**
    - 5.1 **The Dean of Graduate Studies should work much more closely with the Provost, functioning in effect as a Vice-Provost, and given this or a similarly appropriate title, thereby having the authority of the Provost in dealings with Faculty Deans. He/she should participate fully with the Provost and his group in academic planning for the university as a whole, giving input on all matters including resource allocations.**
    - 5.2 **The Dean of Graduate Studies should be the senior University Officer responsible for developing policies on graduate student funding and ensuring that these policies are implemented. Whenever necessary, it should be the Dean who decides on the allocation of internal funding required to implement the minimum guarantee (Recommendation...), again doing so with the authority of the Provost.**
    - 5.3 **The Dean of Graduate Studies should work in close partnership with the Vice-President, Research, on such important issues as advocacy for increased external funding of graduate students, and integrating graduate studies much more closely with research. To achieve the latter objective, the VP-Research should be asked for input into the graduate enrolment plans of the Departments, thus ensuring that the research base necessary to undertake graduate studies is in place and of sufficient depth.**
    - 5.4 **The current structure of having an Associate Dean, Graduate Studies and Research in each Faculty is excellent and should be retained and put to work more intensively. Working individually within their own faculties and as a group, the Associate Deans can play a major role in bringing about the changes recommended in this report.**
  6. **The Dean of Graduate Studies should be asked to develop a comprehensive plan for the services (current and future) provided by the office and the resources needed to deliver these services, keeping in mind that whatever new resources will be available to support the administration of the expanded enrolment will in all likelihood be meagre. Such a plan should carefully consider and negotiate the various interfaces in service delivery**

- between the office and other units such as: the Faculties and the Academic Departments, the Registrar's Office, Financial Services, and the Office of Institutional Research. The plan should be presented to the Provost who will determine through discussions with others and most importantly the Faculty Deans, the need for the various services and ultimately decide on allocating the additional resources required to implement the final version of an agreed-upon plan.
7. The university should adopt a policy of funding every doctoral-stream graduate student for five years at a minimum specified level. This minimum level of funding should be expressed as tuition fees plus a sum for living expenses, and would be assembled from multiple sources, both external and internal, and include teaching and research assistantships. To accommodate historical differences in funding and to respond to severe competitive pressures, there can be two levels for the guaranteed minimum, one for Arts, Applied Health Sciences and (maybe?) Environmental Sciences, and another, say \$2,000 to 3,000 higher, for Engineering, Mathematics and Science.
  8. The University should carefully examine the level of tuition fees for international graduate students to ensure that UW is competitive with other universities in Ontario and Canada in attracting the best graduate students from the entire world. If the fees are found to be relatively high, they should either be lowered or, alternatively, absorbed in the guaranteed funding packages.
  9. In developing their plans for graduate enrolment, the academic departments should give serious consideration to the proportion of their enrolment that should be international. In turn, each Faculty and the University as a whole should develop multi-year targets for international graduate student enrolment. The University should develop a plan to facilitate the recruitment, enrolment and support of international graduate students. Such a plan should consider issues of communication and marketing, tuition-fee level (see Recommendation 8), expertise in assessing the qualifications of foreign applicants, help with obtaining the necessary visas and work permits for spouses, support in the development of the required competency in the English language, housing, etc.
  10. As a goal to be reached over time, every academic unit should participate in graduate studies in some way. In areas lacking critical mass, collaboration with other units within the University or at neighbouring universities should be pursued. Every newly hired faculty member should be expected, and should expect as a matter of right, to participate in graduate studies.
  11. The University should encourage the development of professional masters programs, in a variety of formats and modes of delivery, as a means of

- providing valuable service to the community as well as generating revenue. However, this should be pursued only if it fits with the academic mission and goals of the offering unit.
12. **The University of Waterloo is uniquely positioned to mount graduate co-op programs. The initiatives already underway, especially in the Faculty of Arts, should be supported and other Faculties should be encouraged to pursue this option.**
  13. **Working with the Vice-President, Research, to whom the interdisciplinary research centres report, the Dean of Graduate Studies should establish a process for fostering the development of innovative interdisciplinary graduate programs.**
  14. **As a matter of urgency, the University should develop a plan for significantly increasing the number of residence spaces available for graduate students.**
  15. **The University should ensure that the Career Services unit devotes sufficient resources to addressing the special needs of graduate students.**
  16. **The University should ensure that the double-cohort expansion does not result in graduate students working inordinately longer hours as teaching assistants. It should also assure graduate students that this would not be the case.**
  17. **Although post-doctoral fellows (PDFs) can be more productive research workers than graduate students, Departments especially in the sciences should ensure that educating graduate students in sufficient numbers takes precedence over hiring post-doctoral fellows. The issue of the balance between the number of graduate students and PDFs in each Department should be explicitly addressed and clear policies formulated.**
  18. **If it has not already done so, the University should develop policies on the engagement of PDFs, addressing such issues as the minimum level of stipend and the maximum length of tenure. While the Faculty Deans should have the responsibility for implementing the policies, the Office of Graduate Studies can take on the task of registering the PDFs and providing them with basic services.**

## APPENDIX – I

### REVIEW OF GRADUATE STUDIES AT THE UNIVERSITY OF WATERLOO

#### **BACKGROUND**

The University of Waterloo's planning document for the fifth decade, "Building on Accomplishment" produced by the Commission on Institutional Planning in 1997 identified graduate studies as a critical component to UW's teaching, research and service mission. The Commission made several recommendations related to graduate studies at UW. An extract from the planning document is appended in Appendix A.

The Commission recognized that relative to other peer institutions, UW's graduate student body had been relatively small. Therefore it recommended that UW should increase overall graduate student enrolment to at least its former maximum 1993 level. We are about to reach this target in 2001-2002. However, in the meantime the landscape has changed significantly. The demand for highly qualified personnel has never been as great as it is today. This demand is expected to grow rapidly in the coming years. Canada and indeed the world needs more graduate students to be able to actively participate in an increasingly knowledge based global economy. The recent announcement of the Government of Canada to move Canada from 15<sup>th</sup> to 5<sup>th</sup> position in R&D intensity will also require significant expansion of graduate enrollment in this country.

The Federal Government's recently released "Innovation Paper" points to many exciting opportunities for graduate studies. It sets a target of increasing admission of Master's and PhD students at Canadian Universities by an average of 5% per year through to 2010. Using 2001 as the base line, this target will require universities to increase graduate enrolment by over 40%. With its graduate student body accounting for about 10% of the total enrollment as compared to 15-20% for peer groups, UW has a larger capacity to grow than the others. The innovation paper identifies the following key priorities of the Government of Canada that are of particular interest to graduate studies at Waterloo.

- Provide financial incentives to students registered in graduate studies programs, and double the number of Master's and Doctoral fellowships and scholarships awarded by the federal granting councils.
- Create a world-class scholarship program of the same prestige and scope as the Rhodes Scholarship; support and facilitate a coordinated international student recruitment strategy led by Canadian universities; and implement changes to immigration policies and procedures to facilitate the retention of international students.
- Establish a cooperative research program to support graduate and post graduate students and in special circumstances, undergraduates, wishing to combine formal academic training with extensive applied research experience in a work setting.

Among the above three stated priorities of the Government of Canada, the third one on graduate co-op education clearly presents a unique opportunity to UW.

In view of the above, the Vice-President Academic and Provost has commissioned a review of graduate studies at the University of Waterloo. The central goal is to examine ways to strengthen and improve graduate education at UW; to identify strategic opportunities; to determine what is working, and what needs further improvement or change; and to integrate graduate studies more clearly into the research, and other learning and external interaction missions of the university.

### **Terms of Reference:**

#### *General*

The role of the review is to identify strategic opportunities for graduate studies at the University of Waterloo and identify how internal processes can be made more effective to allow a successful pursuit of these opportunities. This will involve an examination of the administrative structure, operation and policies governing graduate studies at UW, including the development and support of graduate programs and graduate students, and to make recommendations accordingly. The review does not encompass critical assessment of individual graduate programs, which are evaluated through OCGS reviews.

#### *Mandate*

- To consider and make recommendations as to how graduate studies at UW can be more innovative and responsive to the emerging needs of an innovation based society.
- To consider and make recommendations regarding administrative structure in terms of optimal function, and interaction with academic units by taking into account the decentralized nature of UW academic administration.
- To consider and make recommendations regarding administrative functions of the Office of Graduate Studies, namely, student recruitment, application and admission procedures, scholarship and teaching assistantship funding, fees, student records, thesis and project, exhibition and defense procedures, etc.
- To consider and make recommendations regarding graduate program development and monitoring, including the process of establishing new programs, assessing and modifying existing programs, procedures for determining transfer credit, etc.
- To assist with a vision of graduate studies at UW for the next decade which integrates more clearly into the other research, learning and external interactions of the university with a clear emphasis on high quality and innovation.

*Reviewer:*

Professor Adel Sedra  
Vice-President (Academic) and Provost  
University of Toronto.

*Timeline:*

The reviewer will conduct a site visit during the last week of April. The final report is expected to be available by July 30, 2002.

*Consultations:*

Graduate students and faculty members will be invited to participate, and may opt to provide written materials or attend an open meeting. Meetings will be scheduled for graduate program coordinators, the Graduate Students' Association, Deans or designates, and other interested parties requesting such.

*Resource persons:*

Dr. Gary Waller, Associate Provost.  
Dr. Jake Sivak, Dean of Graduate Studies.  
Dr. Jim Frank, Associate Dean of Graduate Studies

*Background material:*

- Extracts from UW's Fifth Decade Planning Document, "Building on Accomplishment"
- Summary of FTE Graduate Enrolment
- Organizational Chart for the Office of Graduate Studies
- Graduate Studies Calendar