The seven departments in the Faculty of Science were asked to submit their departmental three-year plans before the first of August 2006. The Faculty plan contains selected parts of the departmental plans reflecting the priorities of the current Dean as well as his assessment of what is achievable in light of the projected budgets in the next three fiscal years. As well, there are issues that cross-departmental and even Faculty lines that need to be addressed expeditiously and these are presented first. The first three of these issues are beyond the Faculty’s control and resources but are included because it is important that they not escape the attention of the University. The remaining items are not ordered according to priority.

A review of the 2003 – 2006 Three Year Plan shows that most, but not all, of our goals were achieved. In my view, the Faculty is in better shape than it was in 2003 but problems, as well as opportunities, do exist. Six of our seven departments have been externally reviewed within the last three-year period. All of these reviews were very positive as far as the research of the faculty members is concerned.

Planning Assumptions

The only assumption underlying this three-year plan is that the Faculty will meet its targets as far as undergraduate FTEs are concerned. These have been folded into the VP Academic’s budget projections and, if met will result in a base budget increase of $4,275,284 by fiscal year 2009/2010. This is 13.4% of the 2006/2007 base budget and will allow modest growth of faculty complement and support staff.

Faculty Issues

(i) Chemistry Space Rehabilitation: When TASC II is occupied there will be roughly 1200m$^2$ fallout in laboratory space. A tour of this space by the Science Chairs and a later tour of the entire Chemistry precinct by the Associate Vice-President Academic and a representative of Campus Planning revealed a shocking state of affairs. In essence, this section of the Science building must be rebuilt both because of safety concerns and functionality issues. There are of the order of 100 wooden fume hoods that no longer conform to code and are, as we experienced in 2005, a significant fire hazard. As well, the experimental labs have been largely Balkanized into a collection of small non-functional rooms. Renovation at this point is timely because the fallout space can be used as a temporary home for research groups displaced by construction. These renovations will probably cost $15M to $20M and will require provincial funding. I note that, because of safety concerns, UBC was successful in obtaining Government funding for a rehabilitation of its Chemistry Building that is of the same vintage as ours.
Space: Although there will be a significant increase in the amount of office and research lab space for the Faculty as a whole when TASC II is completed, three of our departments will not benefit from this. These three departments (Earth Sciences, Mathematics and Statistics and Actuarial Science) are hemmed in by Schools in the Faculty of Applied Sciences and have no real options for growth. In my view, all three should grow both because of new programs that they are mounting and because they don’t have the resources to adequately service their existing undergraduate and graduate students. Housing mathematicians or statisticians in offices in TASC II is not an attractive option and there is no unassigned laboratory space in TASC II that could accommodate growth in Earth Sciences. It is the view of many in our Faculty that the division of TASC I/TASC II space between Science and Applied Science resulted in a significant oversupply for FAS, especially in light of the failure to meet DTO targets. For example, the School of Computing Science (58 faculty) has 7332 net assignable square meters (NASM) whereas the Departments of Mathematics and Statistics and Actuarial Science (50 faculty at SFU Burnaby) have a combined total of 1629 NASM, according to the SFU Fact Book. The School of Communications, with 23 faculty members, has 1536 NASM. Unless there is a significant reallocation of the existing space, the Faculty of Science will be seriously undersupplied at least until TASC III is built.

Science in Surrey: The multi-year enrollment plan calls for Science to grow its enrollment from 80 FTEs in 06/07 to 160 FTEs in 09/10. This will not be an easy task, given the facilities available to the Faculty at SFU Surrey. Without a Science building, we are essentially restricted to the program mix currently in place. Degree completion programs are possible only in Mathematics and Statistics and in the interdisciplinary MSSC program. Further development of our proposed Biotechnology program will have to be put on hold until we have clarity on when a new building will become available.

Environmental Science (EVSC) Program: It is clear from the external review of this program that a complete overhaul is necessary and that the administrative structure currently in place must be replaced. I have not taken action on this front because the Faculty Structure Task Force has not yet submitted its final recommendations. If there are no recommendations relevant to EVSC in that report, I propose to create a task force charged with redesigning the program from scratch without, of course, diluting the program’s strong focus on basic science. I would hope to have membership on this task force from several (but not all) Science departments as well as REM and Geography. With some of the fallout space resulting from the move to TASC II I would anticipate creating a home for the core faculty and support staff associated with the program. This should promote further growth and development of the program and enhance its visibility and the esprit de corps
of the students. I anticipate creating one or two dedicated positions for this program.

(v) Joint Programming with the Faculty of Health Sciences (FHS): There are presently two joint programs between Science and FHS that have been proposed: Infectious Diseases and Quantitative Epidemiology. For reasons, perhaps rooted more in the personalities of the key players than in structure, progress on the infectious diseases program has been disappointingly slow. Both the proposed graduate and undergraduate programs seem at times to be receding into the distance. As well, our first effort at making joint faculty appointments in immunology and virology ended in failure and in a decision by FHS not to consider further joint appointments. On the other hand, I am optimistic that the program in quantitative epidemiology will be established expeditiously and that a strong faculty core in Statistics and FHS is already in place. In my view, it is extremely important that we establish an effective collaboration in basic biomedical teaching and research between Applied Science, Science and FHS and I will continue to do what I can to move this forward. A related matter is a proposal to strengthen collaboration between SFU, the BC Cancer Agency and the Genome Sciences Center. If this can be brought to fruition, it will considerably enhance our visibility and capacity in health related research.

(vi) LEEF Chair in Pharmaceutical Genomics: An important initiative for the Faculty is the nomination of Robert N. Young for a BC Leadership Chair in Pharmaceutical Genomics. Although this nomination is going forward in 2006, the program will start (if the Chair is awarded) in 2007. I anticipate that we will make a junior appointment in an allied area of research in either Chemistry or Molecular Biology and Biochemistry after Young’s arrival.

(vii) Recruitment and Retention of Students: For the fall of 2006, the Faculty of Science introduced direct admission to programs from grade 12 and began an aggressive recruitment campaign. Department members or advisors contacted prospective students soon after they were admitted. I believe that this contributed to the Faculty essentially meeting its domestic target for 1067. We are also determined to do a better job of retaining both domestic and international students. Poor mathematical preparation is seen by many to be a key factor in a student’s performance in first year science courses and we are attempting to formulate a strategy for identifying students in difficulty, and in need of remedial help, early in their first semester.

(viii) Budgetary Clarity: Each of the last two fiscal years ended with a rather major budgetary surprise – an unwanted large surplus in 04/05 and an even more undesirable large deficit in 05/06. Both of these were at least in part due to an inadequate reporting system at the level of Finance. This is somewhat improved during the current fiscal year. However, commitments made in the
previous year (TASC II completion, renovations to a Chemistry teaching lab that ended up over budget by almost $800,000, new faculty startups and research lab renovations) will undoubtedly lead to another sizable deficit in the 06/07 fiscal year. The decision to fund these necessary or desirable projects was made, in part, because of the incorrect anticipation that budget surpluses would be a continuing fact. I am determined that over the next two years the Faculty’s budget will be managed much more precisely and professionally both at the level of the Departments and of my office. The addition of a Faculty Budget Manager to my staff has already helped immeasurably. In this context, I should note that a part- or full-time budget clerk, in the larger departments at least, might be very desirable. With increasing faculty complements and research budgets the Departmental Assistants are finding it difficult, at best, to cope with the accounting burden. Biosciences has already converted one support staff position into an accounting position and I have authorized a half-time position for a budget clerk in Physics. I anticipate that more such positions will be needed in the next three years.

(ix) Advancement We have a number of initiatives that we would like to fund through our advancement program. Most important are the two BC Leadership Chairs. In my view, the nominal endowment of $4,500,000 is not sufficient to sustain salary, benefits and a significant research budget and our goal is therefore to have the endowment of both of these Chairs reach $6,000,000. A second important goal is to raise the funds necessary to build an observatory for our astronomy courses. As the previous Chair of Physics has frequently pointed out, SFU is the largest Canadian university without an observatory. These structures are not very expensive: $750,000 would provide a more than adequate facility. Finally, fund raising for scholarships and bursaries continues to be a priority.

Faculty Renewal and Growth (SFU Burnaby)

The Faculty of Science has a mere six scheduled retirements over the next three years and three of the positions scheduled to be vacated have already been bridged to. However, the growth in the Faculty budget due to increases in WAFTE complement is expected to be over $4,000,000 over the next three years. Of course, this number is based on the assumption that we will meet our enrollment targets. The sum of these increases is roughly 13% of our total budget and therefore it is not unreasonable to project an increase in the faculty complement of around twenty. As well, I expect that one or more CTEF proposals with significant Science participation will be funded. If so, this will allow further growth of the faculty complement during the next three years. I will now discuss the hiring plan as I see it department by department.

(i) Biological Sciences: There are three scheduled retirements in Biosciences. The Department proposes to replace two of the retirees with a microbiologist
and a molecular toxicologist. This has the support of the Department’s external review committee (2006) and I have approved the searches. The third position will be temporarily used to provide part of the salary for the Thelma Finlayson Chair in Biological Control which is seen as a key appointment for the Master of Pest Management Program. The Department has also identified two strong candidates for Tier II CRCs in connection with the Leadership Chair in Salmon Conservation. One of these candidates will be offered an unconditional tenure track appointment. Separate from these hires, there should not be any further growth in the faculty complement in this department over the next three years.

(ii) Chemistry: Chemistry has no unencumbered retirements until 2010. However, there has been one resignation (Jason Clyburne) and another is anticipated (Jennifer Ressler). These resignations leave the Department understaffed in the areas of inorganic chemistry and nuclear chemistry and replacements will have to be found. I also anticipate modest growth of the faculty complement during the next three years. Corina Andreoiu is a strong candidate for a University Faculty Award (nuclear chemistry). If she is unsuccessful in this competition or decides not to accept our offer, I will make a tenure-track appointment in the Nuclear Science area available to the Department for a 2008 start. If Bob Young is awarded the Leadership Chair in Pharmaceutical Genomics, I will make a tenure-track position in an allied area available and Chemistry is a potential home for that individual. Finally, I expect that the CTEF proposal in Nanomedicine led by Neil Branda will be funded. If so, there is the possibility of a faculty position in this area that will need to be absorbed by the Faculty in 2012 or later.

(iii) Earth Sciences: The Department proposes to add three faculty members (two teaching, one tenure track) over the next three years. One of the teaching appointments is intended for SFU Surrey and I intend to approve that one. Further appointments to the Burnaby Campus will depend on a number of factors such as growth of the undergraduate and graduate programs, the Department’s role in a restructured Environmental Science program and resolution of the space issues mentioned above.

(iv) Mathematics: The Mathematics Department has one retirement in 2006 (Berggren) and no others before 2011. Berggren’s expertise is History of Mathematics and, since there is other expertise in this field in the Department, his position can be assigned to another area. The Department has been authorized to search for a replacement for the fall of 2007. The Department has ambitions to make a further three appointments, two in Burnaby and one in Surrey, separate from the Tier I CRC in Industrial Mathematics. One of the Burnaby appointments is targeted to be an industrial mathematician in a discrete area such as signal processing, symbolic computation, or cryptography. I expect that the search for this individual will be initiated in 2007 after the Mitacs Tier I CRC arrives. The Surrey appointment will be a
conversion of a limited-term lecturer position to a tenure track appointment, effective September 2007.

(v) **Molecular Biology and Biochemistry:** The amount of growth in this Department over the period 2007 – 2010 depends very significantly on the outcome of the current discussions with Marco Marra and Sharon Gorski. This situation should be cleared up before the end of 2006. The Department is currently searching for an immunologist as a replacement for J.K. Scott who holds a Tier I CRC. The other Tier I CRC, D.L. Baillie, is scheduled to retire in 2009. His position has been allocated to F. Pio but I intend to allocate at least one new position to MBB in view of the growth in student numbers in MBB programs.

(vi) **Physics:** The Department has three scheduled retirements over the next three years. One of these positions is linked to a Tier II CRC (Emberly) that is due for renewal in 2007. However, I believe that the Department’s need for more strength in theoretical soft condensed matter/biological physics is sufficiently great that I intend to cancel the linkage if the Emberly CRC is not renewed. The other two putative retirees will be filled with condensed matter experimentalists. The recent departure of Colombo Bolognesi (cross appointed to Engineering Science) provides the Department with another potential opportunity. In my view, the best outcome for Physics would be to hire in the field of nanomagnetism.

(vii) **Statistics and Actuarial Science:** This department has ambitions to add five faculty members over the next three years both because new programs (M.Sc. in Actuarial Science, M.Sc. option in Biostatistics) and emerging opportunities for collaborative research with the Faculty of Health Science. I support the development of the M.Sc. program in Actuarial Science and am persuaded that two more faculty members are needed if this program is to be successful. The Department has already been promised one new position in biostatistics (Dean retention) and I believe that, given the expertise of the existing complement, that this will give them sufficient strength in this area. As is the case in Earth Sciences, this number of new faculty appointments will only be possible if added office space is found.

**Faculty Growth (SFU Surrey)**

The situation at the Surrey campus is much less predictable than at SFU Burnaby because of the uncertainty regarding experimental research. There are currently three-research faculty in Mathematics and one senior statistician, who arrived this summer, based in Surrey. The other departments have largely serviced the Surrey campus with teaching faculty. We have degree completion programs in Industrial Mathematics (Operations Research Option) and in Management and Systems Science (jointly with
Business and Computing Science). I am persuaded that a second appointment in Statistics, perhaps a lecturer, is appropriate at this time. As well, another tenure-track appointment in Mathematics is warranted. Appointments in the other departments will have to wait until we have a construction schedule.

**Undergraduate Program**

(i) The last few years have seen a great deal of activity on this front because of the University wide Curriculum Initiative. Development of BQW courses is now largely complete but we will need to assess their effectiveness during the next three years.

(ii) Most of the Departments are also assessing their service roles. I believe that it is particularly important for Mathematics to undertake a careful reevaluation of their first year calculus streams. I am of the opinion that retention problems in Science are primarily rooted in a mismatch between high school mathematics and university level calculus. This opinion is shared by the Directors of the Schools of Computing Science and Engineering Science and, fortunately, by the current Chair of Mathematics. Perhaps something along the lines of FAN, aimed at students who meet our entrance requirements but who are nevertheless functionally innumerate, might significantly improve our retention rates.

(iii) One of the goals of our previous three-year plan was to increase enrollment in Engineering Physics. This has not happened and it remains a goal for the next three years. Engineering Physics programs are highly popular and successful at Queens and UBC where they are administered by the Physics Departments for which they are a high priority. It is unlikely that the School of Engineering Science will surrender control of that program. However, the departure of Colombo Bolognesi presents the two units with an opportunity to hire a faculty member who will, hopefully, be a more effective advocate for this program inside Engineering Science.

(iv) As mentioned above, the joint program in infectious diseases with the Faculty of Health Science is an important initiative for Science. The goal to have this program enroll its first cohort in September 2007 will likely not be met but initiation in the fall of 2008 still seems possible. I expect that the joint program in quantitative epidemiology will enroll its first students at the same time.

(v) As far as new streams or programs inside Science are concerned, the most significant new activity seems to be in Molecular Biology and Biochemistry (MBB) where a new stream in Molecular Genetics is under development. As well, the new direct admission process has allowed the departments to identify their prospective majors. MBB will be mounting a new first year course targeting primarily, but not exclusively, its majors. This could potentially result in a significant redistribution of first year enrollments with consequent implications for the Faculty hiring plan.
There is an issue that is common to all of the long-established experimental departments, namely obsolescence of equipment in the undergraduate teaching labs. There has not been a budget for replacement of equipment in the teaching labs for a number of years. This cannot be allowed to continue and either central funding or funding from Faculty sources will have to be found on an annual basis.

**Graduate Program**

The graduate programs in all departments continue to be healthy both in terms of quantity and quality. Our successes in the NSERC Doctoral Prize competition over the last decade indicate that our best students (and supervisors) can compete with those of any institution in Canada. As of semester 1061, graduate headcount was 491 as compared to 443 in the spring semester of 2003, an increase of 10.8%. Graduate students comprise 14% of the total student number, still some way from the President’s target of 25%. However, with a Ph.D. program in Earth Sciences and new M.Sc. programs in Statistics and Actuarial Science in the planning stage these numbers should increase. As well, the arrival of Fadil Santosa, the Tier I CRC nominee in the field of Industrial Mathematics, should provide impetus to a planned graduate program in this area. Interestingly enough, the number of graduate degrees awarded has been almost constant (101,97,99) over the last three years despite the increase in graduate headcount. This is clearly a statistic that must be monitored during the next three-year period.

Providing a competitive financial package for our graduate students has been and will continue to be a challenge for all departments. If provincial funding of graduate students does not materialize in the near future, we may have to consider diverting some Faculty resources to graduate student support.

**Support Staff**

Since the implementation of PeopleSoft there have been continuing complaints from support staff about “downloading” and increasing workloads. I am convinced that these complaints are largely legitimate and that the situation is not likely to improve. As well, the growth of our faculty complement and research income has necessarily generated more activity at the DA’s level and in the General Office. I believe that all of the departments are in need of more clerical/budgetary support and will make these positions available as they are requested.

As well, the growth in research funding and in the graduate program has put added strain on the technical support staff and a few new positions in this area will be needed. There is currently an initiative to acquire a confocal microscope that will service researchers in at least four departments in Science and, most likely, others in FAS and FHS. Clearly some level of dedicated support (currently paid for through a grant from MSFHR) will be required.
Notes on the Finance Module

1. I have assumed 5% annual increases in both the TA and Sessional budgets.

2. New tenure-track positions have been budgeted at $100,000 for salary and benefits, except in the case of Actuarial Sciences where $150,000 has been allotted. Replacement positions, CRCs and Leadership Chairs have been budgeted for startup only (50% from Science) and the startup estimated for the relevant disciplines.

3. There has been no discussion at the DAC level of a hiring plan for 2008/2009 and 2009/2010 and there will undoubtedly be modifications to the lists below. However, the total number of positions is consistent with the anticipated budget growth.

New Positions in 2007/2008

1. Biostatistician
2. Undesignated position in Mathematics
3. Leadership Chair in Pharmaceutical Genomics
4. Tier I CRC in Mathematics (Mitacs)
5. Two Tier II CRCs in Aquatic Conservation
6. Statistician for SFU Surrey
7. Immunologist in MBB (Scott replacement)
8. Lecturer in Earth Sciences at Surrey
9. UFA nomination in Chemistry


1. Junior appointment in Pharmaceutical Genomics
2. Industrial Mathematics
3. MBB appointment in Genomics
4. Two positions for Environmental Science Program
5. Actuarial Science
6. Biotechnology Program in Surrey

New Positions in 2009/2010

1. Actuarial Sciences
2. Biotechnology program in Surrey (3 positions)
3. New programs between Science and FHS (3 positions)