

Faculty of Science



Photo by Felix Lee of the Chemistry Department



Academic Plan 2007-2011 Year 3 Update & Progress on Implementation November 2008



The University of Western Ontario

**Report on Faculty of Science 2007-2011 Academic Plan:
Year 3 Update & Progress on Implementation
November 2008**

(submitted November 26, 2008)

The 4-year Academic Plan (AP) was prepared in the fall of 2006 and submitted along with its companion 4-year Budget Plan in November 2006. The content outline of the 2007-2011 Academic Plan is as follows:

- A. Preamble
- B. Vision & Objectives for the Faculty
- C. Academic Staff, Support Staff, & Research Staff
- D. Undergraduate Education: Students & Programs
- E. Graduate Education: Students & Programs
- F. Research
- G. Space
- H. Interdisciplinarity
- I. External Relations
- J. Performance Indicators and Comparative Assessments

The following update and progress report forms part of the fall 2008 planning process. This report, which constitutes part of the fall 2008 planning process, provides a combined update and progress report for each Secs. C – J of the Academic Plan. Sec. A is expository and is omitted here. Sec. B is foundational and unchanged – it is reproduced to provide context.

B. VISION & OBJECTIVES FOR THE FACULTY:

Vision for Faculty of Science

The vision is twofold:

- 1) The Faculty would be, or would be on threshold of becoming, the destination of choice for science education in Canada.
- 2) The Faculty would be the Canadian or world leader in selected research areas and would be emerging as a leader in other areas.

This vision is entirely consistent with, and supportive of, the University goal of providing the best student experience at a research intensive university in Canada. Student experience and research intensity are two themes that weigh heavily in the University's new Strategic Plan, "Engaging the Future"

The role of the vision statement is to provide a destination that we seek to attain. Becoming the destination of choice for science education and a world leader in selected research areas are lofty goals, ones that are intrinsically difficult, perhaps impossible, to measure quantitatively. But if we do not strive for them then we assuredly will not get there. The length of the path to these goals and the pace with which we can move along the path are not known at the outset. This will make the journey interesting, exciting and, at times, unpredictable. The journey may not be complete by the end of this 4-year plan in 2011 but can enthusiastically be continued in the next planning cycle.

Objectives

The Faculty has identified seven primary objectives that are consistent with achieving the vision. All elements of the AP support one or more of these objectives.

- (1) Establish national reputation as a learning intensive Faculty
- (2) Increase research intensity
- (3) Develop a robust research strategy that fosters discovery while enabling agile responses to needs of society
- (4) Graduates distinguished by differential training in communications skills, career skills, & appropriate technical skill.
- (5) Proactive recruitment and career development strategies
- (6) Facilities & infrastructure that enhance research, learning, and recruitment
- (7) Enhanced external relations

These primary objectives are the lenses through which we focus our efforts to achieve the vision described above.

C. Academic Staff, Support Staff, & Research Staff

Tenure-track/tenured academic staff (faculty)

There were 10 tenure-track/tenured and 5 limited term appointments in the first year (2007-08) of the current four-year plan (includes all released positions with an approved start date in 07-08) and 7 tenure-track/tenured and 2 limited term appointments in the second year (2008-09). The Faculty was given permission to split an unfilled CRC 1 into two CRC 2's in 2007-08. Both CRC 2's have been filled: one in Chemistry (incumbent took up position in 2007-08); and the other in Physics & Astronomy (incumbent has been recruited and will take up position in 2009-10). Three UFA applications were successful in the 2007 competition (one in Physics & Astronomy, one in Biology, and one joint Biology-Applied Math). The Biology-Applied Math candidate subsequently withdrew and the other two candidates took up their appointments in the summer of 2007. For the last UFA competition (2008), the Faculty adjudicated an internal competition for permission-to-recruit a UFA candidate and approved three applications to go forward to NSERC (two in P&A and one in Earth Sciences); however neither of these applications was successful. No NSERC Industrial Research Chairs (IRCs) were established in 2007-08 or 2008-09. One IRC is currently under development in Stats and Actuarial and has a reasonable chance of securing the required industrial sponsor, although the process may be delayed by the current contraction in the resources sector. The earliest conceivable start date for this IRC is sometime in 2010-11.

Professional development for faculty

A new program to provide accelerated professional development for academic faculty (tenure-track & limited-term) was proposed in the Academic Plan. This program, now known as the New Faculty Network (NFN) was created in the spring/summer of 2007 and delivery is coordinated by Tom Haffie, the Faculty's Learning Development Coordinator. The NFN was launched August 2007, ran throughout the fall & winter terms of 2007-08, and the fall term of 2008-09. It is targeted towards

relatively new faculty members (the vast majority of participants are in the 1st or 2nd year of appointment) but is open to all. The program covers a wide variety of topics and all aspects of an academic job description in the areas of research, supervision, classroom teaching, service, outreach, promotion & tenure process, etc. The participation rate in NFN events/workshops has dropped in the fall term of 2008-09, presumably because there were only 7 new faculty members taking up their positions in 2008-09 versus 14 in 2007-08 and because probationary faculty hired before 2007-08 took advantage of the programming in its first year of operation (2007-08) and such a “backlog” no longer exists. Given that the maximum number of new faculty expected to start in 2009-10 is 7, a decision has been made to discontinue the NFN and create a faculty and staff support program under the direction of the Assistant Dean Diversity & Outreach but with workshop development and leadership provided by Chairs, Associate Deans, and the Dean. This support program will be open to all faculty and staff and will build on the experience gained in developing the NFN programming to support the professional development .

Women in Science

(1) Postgraduate and Faculty Women in the Faculty of Science

This initiative completed its 4th year of operation under the leadership of the Coordinator, Betsy Skorakis-Doyle at the end of the 2007-08 academic year. Responsibility for all matters pertaining to the support of, and improvement of the workplace culture for, women in the Faculty of Science, as well as to ongoing efforts to improve the representation of women in the graduate student, postdoctoral, and faculty cohorts now rests with the Assistant Dean Diversity & Outreach who takes up this new position in January 2009 (plan for this position is described below).

(2) Status of representation of women in the faculty complement

The gender balance has improved significantly over the last four years. The fraction of full-time female faculty has increased from 12.8% in 2003-2004 to 17.4% in 2006-07 to 21% in 2007-08 and remained at 21% in 2008-09. Of 3 NSERC Industrial Research Chairs and 20 CRCs, 2 and 8 are held by female faculty members, respectively. Seven female faculty have been awarded NSERC UFAs in the past 5 years and three applications were submitted to the final UFA competition in October 2007 (but all were unsuccessful). Recruited female faculty will continue to be supported by the University policy of providing 50% of non-externally funded salary in 1st year of appointment. A Faculty of Science priority in the upcoming University fundraising campaign is the establishment of funds dedicated to the support of outstanding female scholars at the graduate, postdoctoral, and faculty levels through funding mechanisms appropriately targeted to each level.

Assistant Dean Diversity & Outreach

Priorities and Objectives for 2009–2011: The priorities and objectives outlined below encompass four broad areas including diversity, outreach and workplace culture. These initiatives are designed to enhance our diverse community of faculty, staff, and students, to develop further a welcoming, tolerant, and respectful working environment, and to improve safety in the Faculty of Science and throughout Western.

Goals:

To strengthen the internal and external image of Western Science through outreach activities and initiatives related to diversity on campus.

- (a) Through consultation with faculty, staff, students, alumni, external stakeholders, advisory groups, and through other forums, develop a mission statement and a plan (that includes timelines and

success criteria for tracking progress) to improve diversity in the workplace within the Faculty of Science.

- Provide a forum so that ideas, strategies and suggestions related to diversity can be considered.
 - This plan will include specific programs to focus on the appointment and support of women and First Nations faculty, as well as efforts to increase the representation of other under-represented groups on campus. The existence of under-represented groups within Science is a sign that barriers are present; we need to find a way to remove these. Such programs will require dedicated funding which will be sought through some combination of incremental funding in a future annual budget process, reallocation of funds within the existing Faculty budget, and the upcoming University Campaign (in which a priority theme for Science is funding for women in science initiatives).
 - Educate faculty, staff, and students to raise awareness about biases—direct and indirect—that may be present on campus. The document entitled “Employment Equity Guide” will be used as a reference to educate faculty and staff involved in promotion and tenure processes, annual performance evaluation processes, and serving on any type of appointment committee. All members of the above-mentioned committees will be required to read this guide prior to participation in any of these activities.
 - The Assistant Dean will serve as the Dean’s delegate on appointment committees and annual reviews to ensure that the committee members become educated and sensitive to unconscious biases or exclusionary behaviours.
- (b) Coordinate all outreach activities through the Faculty of Science office in order to present a united and complimentary set of programs across all Departments.
- Present this unified outreach plan through organized, updated, Faculty of Science outreach web pages.
 - Maintain an inventory of Departmental outreach activities.
 - Work with Departmental outreach committees to secure funds in support of outreach activities.
- (c) Ensure that all outreach activities reflect a welcoming, diverse, tolerant Western community. In this way, outreach activities can enhance efforts related to diversity issues.
- (d) Communicate progress reports to other members of Western Science so that everyone can embrace the goals of our diversity programs. Through awareness and education we will continue to build a welcoming environment where everyone is willing to work together to ensure the success of all members.
- (e) Safe Campus Initiative
- Create a web page resource about safety issues for the Faculty of Science that includes the policies, regulations, and support available across campus. After consultation with other interested groups on campus and members of the Faculty of Science, develop a mission statement to reiterate expectations for conduct on campus. The initiatives taken by the Faculty of Science are meant to supplement, not supersede, other policies already in place at Western.
 - The Department of Chemistry has instituted a comprehensive Risk Management Policy which aims to promote and encourage the adoption of a safe work culture through education and by example. Further, Chemistry’s Continuous Improvement Plan is a statement of their mandate to diligently continue to develop a safer work place. This is achieved by being proactive in

safety matters, to evaluate and implement improved procedures and to communicate openly with Supervisors and Workers. Following Chemistry's lead, other Departments engaged in experimental science will be encouraged to adopt a Risk Management Policy and Continuous Improvement Plan with assistance from Occupational Health & Safety. The next Department in line appears to be Earth Sciences.

- Creation of a Faculty-wide incident reporting form, whereby a student's aggressive, inappropriate or anti-social behavior can be documented and reported the Dean's office by faculty or staff in charge of a classroom or laboratory. Patterns of 'low-threat' but repeat behavior will be reported to campus Police for evaluation of further action.
- A review of security situation and practices in Faculty Office was undertaken in 2008 by Campus Police and the bulk of the ensuing recommendations have since been implemented.

(f) Creating an Environment of Respect Initiative

- Respect for others is an obligation for everyone on campus, and everyone must share in this responsibility. Faculty members must provide leadership and need to be motivated, educated, and activated to take a principal role in achieving systemic improvements in this area.
- Within Science, a committee consisting of faculty, staff, and students will be formed to maintain ongoing dialogue within all departments to guarantee that the policies, resources, and regulations adopted to ensure a respectful and tolerant climate on campus are implemented, and to identify any deficiencies that currently exist.
- Partner and promote participation in educational sessions related to these issues, developed by other interested groups on campus. For example, the sessions developed by Human Resources entitled, "Saying YES to Respect" and "Respect in Action" should be advertised and promoted within Science.
- The Department of Chemistry is about to offer a workshop (on Dec. 8, 2008) entitled "Safe Campus Initiative" which will cover the following topics:

Harassment identification and prevention

Safe Campus initiatives

Occupational Health & Safety

Fire Safety

Violence Continuum and avoidance

Selected Departments in Science will be encouraged to follow suit with their own, suitably adapted workshops with assistance from the Chair of Chemistry and Assistant Dean Diversity & Outreach.

(g) Faculty & Staff Professional Development

- Coordinate the creation and implementation of programming (printed & web resources, workshops, events, etc.) to provide opportunities for all faculty & staff to develop skills, to become aware of policies, processes, and procedures, to learn best practices, to facilitate career development, and to foster life-long learning.

A PASF to support the women in science program and the new Assistant Dean position was awarded in response to a fall 2007 budget request.

Details: \$10K per annum for years 2, 3, and 4 of the current planning cycle.

D. Undergraduate Education: Students & Programs

Numerous initiatives in undergraduate education and recruitment have been undertaken since the previous academic plan update of November 2007.

Phone Campaign, March 2008

In March of this year, a small army of volunteers, most of whom were senior students, made over 1000 phone calls to the top-listed students who had been given offers to the Faculty of Science/ BMSc programs. The success rate as measured by the number of calls answered was around 70%. So roughly 700 students and/or parents were personally congratulated, and given the opportunity to ask questions about programs and campus life. It is difficult to gauge the impact of such campaigns, but we are confident that in nearly all cases, the students and parents were thrilled to get a call and were most appreciative of the personal contact. We plan to repeat this effort in 2009.

Teaching Awards Advisory Committee

This committee, created in 2008 was given the following mandate:

- raising awareness of the influence of teaching on the student learning experience
- promoting good teaching by increasing the number of applicants for teaching awards and grants
- celebrating excellence in Science teaching & learning via the recognition associated with teaching awards and grants

This committee, which has representation from 5 departments across the Faculty of Science, has already been actively pursuing its mandate and has also developed the criteria for a new teaching award in Graduate Education.

Science/BMSc Internship Program

The preparation for, and the completion of a Science Internship, including workshops on such topics as: writing of cover letters and resumes, presentations skills, concise writing, etc., as well as the required written report and presentation amounts to a substantial commitment by students, and by necessity, includes a significant academic component. The Faculty of Science believes that the awarding of academic credit is appropriate, and will help to attract more students into this program. It is also felt that the awarding of a 'With Internship' designation on the degree certificate is appropriate recognition that these students have obtained a significant academic qualification above and beyond their degree. It has long been the practise in Science to have this designation on the transcript only (the designation is given on the degree certificate in the Faculty of Engineering). It is believed that the designation on the degree certificate will also help to attract more students into this program. Furthermore, International Students have not been permitted to participate in the Science Internship Program due to government regulations which require that a co-op/internship be a mandatory (i.e., for credit) component of the academic program. Signifying this designation on the degree certificate, along with awarding academic credit for the internship, will allow International Students to participate in this program. This will allow these students to gain experience which will significantly aid them in securing future employment in Canada. Proposals for this change have been approved by Math/Physical and the Med/Bio EPCs, and will shortly be forwarded to SCAPA.

Workshop for First Year Instructors

In the fall of this year, prior to the start of term, we brought together first-year instructors and other representatives from all departments in the Faculty to organise what we believed to be the first workshop of its kind at UWO. There were over 50 participants, including representatives from the learning Development Centre, and the Vice Provost (Academic Programs & Students)

Our desired outcomes from this workshop, included:

- creating awareness of course content, learning objectives, and anticipated student outcomes outside the home department

- sharing best practices in teaching and learning methods
- creating a sense of community amongst first year instructors
- exchanging ideas, in particular with relevance to curriculum development
- assessing skills intended to be acquired in first year and begin to develop a first-year student skills inventory
- begin to assess first-year workload for student taking the typical suite of introductory Science courses
- recognise opportunities for common policies
- announce and discuss any pending changes

The workshop was indeed very successful and has led to potentially significant changes in the way that first year courses are delivered (this initiative is outlined briefly in the next paragraph) and to a first year committee that will pursue other action items emerging from the workshop, provide a forum for discussing other 1st year initiatives, and providing a steering group for future workshops.

First-year program in Science

i) Creation of a first year program in Science using one-semester courses only

Being able to offer students the most possible flexibility in choosing their programs, and importantly, being able to *alter their path* after the first semester is not only internally consistent and beneficial, but it is also consistent with the goals of the Bologna Accord, which is designed to allow students to adapt their programs to involve more than one University. Biology, Chemistry and Physics are the only departments in Science who still offer full year courses. The Departments of Mathematics/Applied Mathematics went through the exercise last year of dividing all remaining first year courses into half-course options, and we are now actively and perhaps ambitiously encouraging the remaining departments to do the same. For some students, being able to complete their studies in chemistry and/or biology and/or physics after one semester, and so be able to try an introductory Earth Science or Computer Science course, another math course, or even a non-science course in the second semester would be a huge reprieve. It would also of course, be of great benefit to the departments of Computer and Earth Sciences, which have struggled with attracting students away from the traditional ‘Math, Chemistry, Physics and Biology’ first year schema that is required by the BSc program. First year half-courses in these subjects also increases the flexibility for non-Science students wishing to take these subjects for interest or to fulfill the breadth requirement whereas full courses often constitute a significant barrier to students seeking to take courses outside of their area of specialization.

ii) First-year course guarantee

The Faculty of Science will continue to guarantee places in all first-year courses to all qualified first-year students. That is, provided a student meets the prerequisite/co-requisite requirements, she/he will not be denied access to any chosen first-year courses offered in the Faculty of Science.

Articulation Agreements with Community Colleges

This year saw the construction of such an agreement between UWO Department of Chemistry and the Chemical Production and Engineering Technology (CPET) program at Lambton College. This agreement will allow BSc Chemistry students an accelerated path through the CPET program, and from there into well paying jobs in the resource sector.

We have initiated informal discussions with Sheridan, St Clair, and Fleming Colleges and there are clearly several opportunities for very lucrative bilateral agreements here, which shall be pursued imminently. We continue to support and have recently updated an agreement with Fanshawe College between their Science Laboratory Technology/ Environmental Technology programs, and our

Environmental Sciences and Chemistry Modules; this arrangement has attracted a steady flow of students.

Major Review of all Programs offered by the Department of Statistics and Actuarial Sciences

In January 2007, the Department of Stats & Acc. Sci. began a comprehensive review of all courses and modules offered by the department. The motivation for this review was guided by the following principals:

- University Strategic Plan and Science Strategic Plan, to provide enhanced student engagement in the department's courses.
- Possible accreditation with the Statistical Society of Canada
- Maintenance of already outstanding program with the Society of Actuaries
- Strengthening all programs with the department

The review, which is near completion, will result in the deletion of 9 courses, the introduction of (or replacement of) 10 courses and consequent major revisions to all modules offered by the department.

Dean's Advisory Committee on Undergraduate education

This committee, consisting of Faculty, Student and Administrative Staff representatives, has undertaken a comprehensive review of the way that undergraduate education is delivered in the Faculty of Science. In the short term, this committee will produce a summative report/blueprint to address issues such as emerging trends and new programs in Ontario and Canada, curriculum design and development, student engagement learning, evaluation of academic performance, the impact of the Bologna accord.

Over the course of several meetings, the committee was given the opportunity to discuss these issues with:

Representatives from the Faculty of Education

Representatives from Sheridan College

The (former) Vice-Provost (Academic Programs & Students)

The Provost

International Program Development Coordinator

A report is expected in the Spring of 2009. Some of the ideas generated through committee deliberations and the dialogue with visitors to the Committee (as listed above) have been initiated and are in various stages of implementation.

Counseling Service

A thorough review of every aspect of the current counseling operation was performed by three external reviewers in February 2007. The ensuing report contains an extensive set of recommendations, the leading one being the creation of a new senior staff (PMA) position of Academic Manager to oversee the counseling operation and improve the quality of counseling services available to undergraduates. This position was filled in February 2008 (Penny Westmacott) and the incumbent has since implemented the vast majority of the report's recommendation and has succeeded in re-organizing the operation, in filling all vacant and new positions, and in achieving an immense improvement in the level of customer service and satisfaction. The Academic Manager position has removed responsibility for management and of the counseling operation from the Associate Dean Academic, thus enabling the latter to turn much of his time and effort to providing academic leadership in undergraduate education. The results of this change are evident everywhere, including this section (Undergraduate Education) of the present academic plan update document.

Learning Development Update

The Academic Plan states a goal for the Faculty to become the destination of choice for science education in Canada. Part of the responsibility for supporting the Faculty in achieving this goal lies with the Learning Development Coordinator. Initially grown out of a jointly supported Faculty Associate position with the Teaching Support Center (2006), the position of Learning Development Coordinator was created in 2007 as a 40% secondment (10% in TSC). Now, in 2008, PASF funding has supported the expansion of the position to 60% (50% in Faculty of Science plus 10% in Teaching Support Center) through June 30, 2011. This position secures leadership for three existing projects and provides for the development of new programming in the future.

i) First Year BioLiteracy Project

Western is one of several sites across the province selected to participate in a HEQCO-funded project to study the impact of various interventions on student engagement in higher education. The local intervention, The First Year BioLiteracy Project, looks at the implementation of a writing-to-learn tutorial curriculum for the nearly 1800 students in first year Biology (1222 and 1223). Pre-intervention surveys and skills assessments were conducted with the previous class in the spring of 2008 and with the current class in September 2008. Curriculum development and delivery is on-going. Post-intervention data collection is scheduled for spring of 2009.

One widely considered measure of student engagement is the National Survey of Student Engagement (NSSE). This instrument was administered to all first and fourth year students in the Faculty of Science in Spring of 2008. A targeted NSSE administration will poll only first year Biology students in Spring of 2009.

ii) Growing Intensity: Undergraduate Learning in the Faculty of Science

The Academic Plan declares our intention to become known as a “learning-intensive” Faculty. Realizing this intention will require the various functional groups in the Faculty (i.e. faculty, staff, graduate students and undergraduates) to collaborate in the development and implementation of a wide range of new procedures, programs and learning experiences. Under joint facilitation by Tom Haffie (Learning Development Coordinator), Natasha Patrito, (Teaching Support Center), Fred Wu (Science Students’ Council) and Melanie Tinney (Science Students’ Council), the Faculty of Science is conducting an inquiry into the notion of “learning intensity” in the experience of undergraduates. This Inquiry is designed to engage the Faculty as a whole - faculty, students, staff, alumni and emeriti - in generating broadly supported programs and/or pilot projects to promote more intensive learning. It will address questions such as, “What does undergraduate learning intensity look like in the Faculty of Science?” “What conditions are we creating that foster it?” “How can we create more of it in the future?”

The basic design will see a broadly representative Working Group gathering stories of learning intensity through one-on-one interviews. These learning experiences will then be analyzed in a way that formulates Provocative Propositions – statements of learning intensity that the Faculty would like to see in the future. The community as a whole will then gather in a Town Hall style meeting to develop and rank specific ideas for further support and implementation. The ideas emerging from the Town Hall meeting and the Working Group activities will guide the creation and specification of Faculty Learning Initiative Awards, beginning in fall 2009. Individual or team awards (four per year, selected on a competitive basis) will be given to develop innovative projects in Faculty of Science courses or other educational activity. The Working Group (13 people) has been recruited with representation from current faculty, staff, undergraduate and graduate students as well as alumni and emeriti. Interviews are scheduled to begin late in November; the Town Hall meeting is in late January.

iii) New Programming

There are many opportunities to introduce programming in support of better learning in the Faculty. The two projects described above (“BioLiteracy” and “Growing Intensity”), combined with the associated enhanced NSSE data survey data[#], the associated application of the Classroom Survey of Student Engagement (CLASSE) survey, plus other Science Student Council-led research projects will provide the most comprehensive survey of student experience and satisfaction ever been undertaken in the Faculty of Science. Specific ideas that are likely to be successful will be generated by the Growing Intensity project described above. The recently formed First Year Science group emerging from the First Year Instructors’ Workshop will also identify areas for development. Plans are already in hand for a Conference Week “Professional Development” Day, as well as Instructional Skills Workshops for Sessional Faculty.

A PASF to support the Learning Development Coordinator position and the “Growing Intensity” project was awarded in response to a fall 2007 budget request.

Details: ~\$60-70K per annum for years 2, 3, and 4 of the current planning cycle.

[#] The HEQCO funded BioLiteracy project described above provides for 100% NSSE sampling of all first and fourth year Science students over a three-year period, as opposed to the standard sampling rate of 15% every other year.

E. Graduate Education: Students & Programs

Creation of New Programs

The following programs have been accredited by OCGS since submission of the Academic Plan in November 2006:

- Masters in Environment and Sustainability [Category 2, accredited in summer 2007; began operation in September 2007 with enrolment of 24; current September 2008 enrolment of 26]
- Collaborative Program in Environment and Sustainability (MSc and PhD; formerly Environmental Science) [accredited in Nov. 2007; current enrolment is 37 (18MSc + 19 PhD)]
- Collaborative Program in Planetary Science (MSc and PhD) [accredited in Oct. 2007; began accepting students in Jan. 2008; current enrolment is 18 (14 MSc + 4 PhD) with potentially 5 additional students to start in January 2009]
- Geophysics and Geology (Accelerated MSc) [Category 1; Geophysics was approved by FGS with OCGS consent in spring 2007; delayed start due to resignation of Dr. D. Eaton in Oct.2007; first offering in Sept 2009]

No other new graduate programs have reached the stage of submitting a proposal that would trigger the process of seeking accreditation. Future possibilities are the Collaborative Program in Financial Mathematics, Materials Science, and Bioinformatics. For differing reasons, development of these programs appears to have stalled in years 1 and 2 of the current planning period. Forcing the issue in a “top-down” approach is unwise since it would likely lead to a poorly run program lacking that essential core of sufficiently commitment and engaged faculty members. The Faculty of Science remains poised to facilitate the creation of any of these proposed programs as soon as professorial leadership and passion for the program emerges at the department level or from an interdisciplinary unit. At the time of writing it appears that Financial Mathematics is the lead candidate for formation of new program in year 3 or 4.

Enrolment Situation at Nov. 1, 2008 and Projections

The Faculty of Science has increased its total graduate student enrolment by 69 % from 185 MSc and 172 PhD students in 2000-01 (baseline is Nov. 2000 headcount) to 294 MSc and 314 PhD students in 2008-09 (based on count at Nov.1, 2008. The growth over the baseline year in MSc and PhD is 59% and 83%, respectively. The Faculty of Science aims to achieve a graduate enrolment complement that reflects a ratio of graduate students per tenured/tenure-track faculty member of 3.5:1, a ratio that would place

Western Science competitively among other Faculties of Science (or equivalent) in the G13 comparator group. The ratio as of Nov. 2008 is 3.23:1 (608 students and 188 tenured/tenure-track faculty) which is up from the ratio of 3.0:1 at November 1, 2007 and 2.8:1 at November 2006). With an anticipated faculty complement of approximately 182 by 2010-11, this 3.5:1 target ratio translates into target of approximately 640 graduate students which represents an increase of ~ 80% over the Nov. 2000 baseline. Using a linear growth scenario to measure progress provides a simple tracking tool. Linear growth for a decade starting Nov. 2000 would imply that 8/10ths of the target of an overall increase of 80%, i.e., 64 % growth, would be achieved by Nov. 2008. The actual growth at Nov. 2008 is 69%.

Enhanced grad funding model

For the 2008-09 academic year the Faculty is continuing an incentive-based funding model for incremental growth in domestic graduate enrolments (over Nov. 2006 baseline) on a departmental basis. This scheme is entirely analogous to the Provost's GEF+ funding scheme for incremental domestic growth at the Faculty level. In December 2008 or January 2009, each Department will receive \$7K per incremental domestic student over the 2006 baseline. The \$7K consists of the GEF+ (\$4K) and the Faculty of Science GEF++ (\$3K; funded by a UPIF spanning years 1-4); the \$7K goes to the Department but must be allocated to direct support of graduate stipends. In addition for 2008-09, the Faculty provided a \$1700 entry scholarship (GTSS – Graduate Tuition Scholarship in Science) to **all** newly enrolled domestic graduate students. This scholarship combined with the WGRS at \$3750 approximately covers the cost of domestic tuition. The GEF+/GEF++ incentive scheme and the entry scholarship will be continued for 2009-10. In addition, a full Teaching/Research Assistantship (\$10,700) will be awarded for each incremental domestic student in Departments where there is demonstrated need. With this multi-component finding package we have attempted to lower significantly, if not remove, the stipend support obstacle to graduate student enrolment growth.

Professional Development for Graduate Students

As outlined in our planning document last year and to address a need identified in the Faculty of Science annual survey of undergraduates in Science, we have embarked upon a 4-year plan to enhance the graduate student experience for our international graduate TAs and the learning experience of Science undergraduates. The Science Teaching Assistantship Training (STAT) program has as its goals to develop discipline- specific TA materials for each of the 8 Departments in Science. Building on the successful Chemistry pilot project last year, discipline-specific materials designed to improve the teaching abilities of the TAs, with obvious concomitant benefits for the undergraduates, are being developed, in collaboration with the Teaching Support Centre, at a rate of two per year according to the following schedule:

2007-08	Biology + Physics
2008 -09	Mathematics + Applied Mathematics
2009-10	Earth Sciences + Astronomy
2010-11	Statistics and Actuarial Sciences + Computer Science

The Chemistry, Biology, and Physics modules are being offered this year to TAs enrolled in the course Communication in the Canadian Classroom being offered by TSC. Mathematics and Applied Mathematics modules are currently being developed.

F. Research

Support for training of highly qualified personnel who are not in the graduate student cohort

Undergraduate summer research: The search for funding to establish a set of summer undergraduate research assistantships to be awarded on a competitive basis across the Faculty has been shifted from a UPIF request (in year 1) to the upcoming major University fundraising campaign.

Postdoctoral fellowships: The search for funding to establish systematically a set of Postdoctoral Fellowships (two-year tenure) to be awarded in a cross-Faculty competition has been shifted from a UPIF request (in year 1) to the upcoming major University fundraising campaign.

Industrial research and commercialization of research

The Faculty of Science Academic Plan (2007-11) called for the creation of a Business Development Manager position in order to expand relationships with industry and to increase industrially sponsored research and technology transfer (patents and licensing of intellectual property) in the Faculty of Science. In this pilot project, the incumbent Patrick Therrien is funded by the Faculty of Science and reports to WORLDdiscoveries™, formerly Industry Liaison (IL).

The role of the Faculty of Science Business Development Manager is to add value through advice and assistance on industry research grants, Proof of Principle programs, contracts and intellectual property matters. Focus will be placed on leveraging the funds necessary for product development through various funding sources including government agencies, industrial partners, and investor community.

Goals for the remainder of the current 4-year cycle are:

1. Increase industrially sponsored research.
2. Increase the quantity and quality of Report-of-Inventions (ROIs).
3. Increase number of applications and success rate for industry sponsored grants and Proof of Principle programs.
4. Significantly increase the engagement of two Departments in the spectrum of industrial research and commercialization of research results as measured by research contracts, grants-in-aid of research from industry, tech transfer, consulting, adjunct appointments of industrial scientists.
5. Work directly with Science Internship and Career Services to increase industrial research experience for graduate students, and internship placements for undergraduates.

New agreements with other institutions/organizations

A formal agreement (Letter of Understanding) between the Dept. of Biology and Bird Studies Canada was reached in the winter of 2008. Its provisions include: collaborative research projects and research funding, adjunct appointments of qualified BSC staff, co-supervision of graduate students, and controlled access to UWO library resources.

Organization of research enterprise

i) Biotron Centre

The year 2008 has seen considerable advances with regard to the organizational structure of the Biotron, starting with its designation of formal status as a UWO Centre in spring 2008. In accordance with the management plan contained in the Centre document, there have been changes to the leadership. In particular, the new Scientific Director (J. McNeil) was appointed in August 2008 and a new position of Managing Director was created in September 2008. As regards the latter position, the first incumbent is R. Poole who is serving on an acting basis, pending the search for a permanent incumbent. This reorganization also involved the creation of a Steering Committee in September 2008 (as per the governing structure specified in the application for Centre status) and the elimination of the previous two positions of Business Manager and Technical Director. A detailed plan to achieve readiness for

operation and full utilization of facilities, as well as to sustain operations beyond the five years of CFI Infrastructure Operating Funds (IOF), was submitted to the Steering Committee in October 2008. A plan to achieve readiness for operation and full utilization of the Biotron is provided in the fall 2008 Faculty of Science planning document.

ii) Surface Science Western (SSW)

The Strategic Plan for SSW is provided in the fall 2008 Faculty of Science planning document. The key points are as follows:

- The relocation to the Research Park has been agreed upon and the funding model is in place to support incremental occupancy costs. The move from the current space in Western Science Centre is scheduled to take place shortly after completion of new research building in the Research Park. Tentatively, completion is anticipated for summer 2009.
- The business activities of SSW have seen a decrease in industrial revenues due to the economic downturn; SSW management has responded with an expenditure reduction program.
- There have been increases in academic activity and in revenue from collaborative grants with industry in the last 12 months; plans call for continued expansion in this direction.

iii) Centre of Planetary Science & Exploration (CPSX)

The planetary science researchers (an interdisciplinary group mainly in Physics & Astronomy and Earth Sciences) obtained recognition as a Centre (see write-up on CPSX in Sec. H below) in 2008. Other initiatives were vigorously pursued by this group, including formal links with NASA and the spearheading of the proposed Canadian Astromaterials Facility (through a CFI national project)

iv) Nanofabrication Laboratory (Nanofab Lab)

The search for a new Director was conducted in the spring 2008 as the three-year term of Silvia Mittler was drawing to a conclusion. The new Director was selected by a search committee on basis of an open internal competition. There were several applicants, and the unanimous selection of the committee was B. Kraatz (Chemistry) who started a three-year appointment in August 2008. A new operational plan has been formulated, aiming at increasing the Nanofab Lab usage, both within UWO and externally (at other universities and industry). A new Users' Committee has been established to advise and provide feedback on accessibility issues, user fees, etc. It is hoped that, with the new operational plan, the Nanofab Lab will be able to achieve fiscal sustainability.

v) Environmental Research Station (the Farm)

The current Director will be stepping down Feb.28, 2008. It is proposed that a new Director will be identified through a search committee on the basis of an open internal competition, following the model adopted recently for the Nanofab Director search. This personnel change will provide an opportunity to formalize and expand the organizational structure of the Farm. A Steering Committee for the Farm will be formed by January 2009, and the Director will report to and be an ex officio member of this Committee. The new Director (in conjunction with the Steering Committee) will develop operational and long-term plans for the Farm. New developments include the arrival of ICFAR, providing some unprecedented opportunities and a few new operational/management challenges, and a scheduled relocation in summer 2009 to the Farm of the Light Detection and Ranging (LIDAR) facility for atmospheric research currently located at the Delaware site to the Farm in summer 2009.

vi) Materials & Biomaterial Institute (MBI)

It is proposed to reorganize (and rename) the Western Institute of Nanomaterials Science (WINS) as the Materials and Biomaterials Institute (MBI). The background is that in the fall 2007 an ad hoc committee

was commissioned by the Dean and chaired by the Associate Dean Research to prepare a report and recommendations for a new management approach and organizational structure to provide coherent and visionary stewardship over the Materials & Biomaterials research theme, the largest research enterprise among the Faculty's five themes. A report was submitted and the ad hoc committee met with the Dean in the Spring 2008 to discuss the proposals. The recommendations to formalize the organizational structure of the Institute through a Steering Committee and the formation of other committees for specific activities (such as graduate teaching, outreach through seminars and workshops, etc) were accepted by the Dean. It was also decided that there would be a renaming to Materials and Biomaterials Institute (MBI) to reflect better the overall research activities of the members and to conform to the name of the research theme as it appears in the strategic research plans for Science and UWO. It is anticipated that the formal proposal to rename and restructure the Institute will be made to the VP Research early in 2009. Following that, there will be a search for its first Director.

vii) Institute for Mathematical Sciences

An external review was carried out near the end of 2007 of the research theme of Computational Sciences, one of the Faculty's five themes. During the reviewers' visit and in their report submitted afterwards, there were ideas floated regarding the formation of an "Institute for Mathematical Sciences" to provide a focus for (and to promote interdisciplinary activities between) the four "mathematics" departments, namely Mathematics, Applied Mathematics, Statistical & Actuarial Science, and Computer Science. In the last few months David Riley (chair of the Mathematics Department) has held planning meetings with the other three chairs to examine the merits of forming an Institute. There is a clear consensus in favour of forming an Institute, and the chairs' group has explored various options for its role and organizational structure. These discussions are ongoing, and a vision is being formulated of how the Institute might develop in years 3 & 4 of the current 4-year cycle (i.e., without any fiscal or space resources) as well as beyond that time frame. Following wider consultations, we anticipate bringing forward a proposal for an Institute later in 2009.

viii) Centre for Chemical Physics (CCP)

The role and activity level of CCP has diminished considerably in recent years. This is partly through changes in the nature of interdisciplinary research in this field and the formation of other groups (such as WINS/MBI). It has been decided that base-funding to CCP from the Faculty of Science will be eliminated at end of the 2008-09 fiscal year. The current Directors' term ends on June 30/09 and he has already indicated he does not wish to be reappointed. The CCP membership now needs to decide on the future of CCP, given that there will be no base-funding, the need to conduct the search for a new Director, and the generally low level of recent CCP activities. Some activities of CCP might usefully be embodied in the new MBI (such as a modestly-funded visitors' program).

Strategic Research Plan

In the winter term of 2008-09, the Faculty will prepare a strategic research plan for the five-year period 2009-10 to 2014-15. The development of the plan will be led by the Associate Dean Research and informed by:

- consultations with stakeholders in the Faculty and cognate stakeholders in other Faculties (including Engineering, Schulich, and Social Science), the Office of the Vice-President Research, Research Western, WORLDiscoveries, etc.
- the external reviewers' reports on each of the 5 existing research themes (and internal feedback that these reports have generated).

- internally generated reports from the major facilities (Sharcnet, SSW, Biotron, Nanofab Lab, Environmental Research Station, Centre for Planetary Science & Exploration, Centre for Environment & Sustainability, WINS/MBI).
- the University's new Strategic Research Plan (2008) and the University Strategic Plan (2006): *Engaging the Future*.
- existing and anticipated relationships with external organizations, including Fields Institute, Perimeter Institute, Institute for Catastrophic Loss Reduction, University of Guelph and Agriculture Canada (in connection with the Biotron), Canadian Light Source, Ontario Photonics Consortium, Bird Studies Canada, National Research Council Industrial Materials Institute.

International research

The development of definitive, Faculty-wide programs that enable sustainable research efforts involving international partners has not yet occurred and remains both a challenge and an opportunity for the Faculty of Science. The primary goal remains the establishment of a well-defined, formal collaborative arrangement involving graduate students and research between the Faculty of Science and one foreign partner institution. It is recognized that formal arrangements are preceded by extensive exploratory discussions, exchange visits, and trial collaborative research projects by individual faculty in order to build a relationship to the point where an agreement can be undertaken at the institutional level. Thus a parallel objective over the remainder of the planning cycle is exploration of new links with a wide spectrum of Departments/Institutions on other continents. Since Nov. 2007 the following activities have, or will have, taken place:

- meeting with Vice-President of Hong Kong Science & Technology Park (visited UWO, Nov. 2007)
- trip to Rwanda for meetings at National University of Rwanda, Kigali Institute of Technology and government ministers (Dean was part of senior UWO delegation that visited Rwanda in Dec. 2007)
- Ongoing discussions to establish collaborations with India (Associate Dean Research, L. Lau, R. Lipson, M. Singh, P. Krishna). Several Science faculty members are organizing and/or participating in a nanomaterials/photronics conference in Allahabad in January 2009.
- Ongoing discussions to renew an exchange program with the federal universities in Fortaleza and Natal in Brazil (Associate Dean Research).
- Meetings with German representatives of Ontario-Baden-Wuerttemberg program (Associate Dean Research met with visiting delegation in 2007). There have been promising increases in the number of Canadian students participating.

Stewardship of grant and award applications

The Faculty of Science has established a rigorous process to pre-review in a systematic fashion tri-council operating grant applications (mostly NSERC, but a few CIHR and SSHRC). Participation is voluntary and researchers who participate are given a \$1000 research grant in support of their own research program. This exercise is coordinated by the Associate Dean Research. Draft versions are submitted early to the Dean's Office (about 6 weeks prior to the external deadline). These grant applications are then reviewed by a pool of senior researchers, many of whom have served on NSERC grant selection committees, and constructive feedback is provided to the applicants. The uptake in the first year of operation (fall 2007) was 26 participants, about 45% of the total and higher than anticipated. The goal is to increase both the success rate for tri-council funding and the average dollar value of individual NSERC Discovery (or other operating) Grants. Analysis of the data from the first year indicated that those who participated in the program and were renewing fared slightly better (on average by about \$3,500) compared with non-participants. Also the rather smaller group of first-time applicants who participated had a slightly better success rate than those who did not. In the fall 2008 tri-council

submissions there were 30 faculty members who participated. We will continue to track the effectiveness of this program.

G. Space

The reader is referred to the updated Faculty of Science space plan that accompanies the fall 2008 budget submission; it contains extensive modifications from the space plan prepared one year ago.

Summary of space allocation/renewal since submission of the fall 2006 Faculty planning document:

- Several minor reallocations of existing space within the Faculty;
- Completion of Phases 1 & 2 of B & G renovation and reoccupation of renovated space; commencement of Phase 3;
- Occupation of the undergraduate space (1st year labs for Chemistry & Physics) in the Materials Science addition; outfitting of the research space on the lower level and the two uppermost levels is ongoing and occupation of research laboratories is expected to occur throughout 2009;
- Renovation of one undergraduate lab in the Chemistry Addition.
- No acquisitions of additional space;

Anticipated space reallocation/renewal during the remainder of the 4-year planning period:

- Completion of Phases 3 & 4 of the B & G renovation and reoccupation of renovated space
- Release of all space assigned to Science in Staging Building
- Acquisition of space occupied by FIMS in North Campus Building (tentative) and assignment of that space to Biology.
- Completion of the Physics & Astronomy renovation (may be further delayed and reach completion beyond current 4-year planning period).
- Move of SSW to Research Park and reassignment of SSW space in WSC to Earth Sciences

H. Interdisciplinarity

Interdisciplinary Programs & Initiatives in Science

(i) Undergraduate programs

Significant revisions to the Physics & Astronomy-based courses supporting the *Materials Science program* (involving Physics & Astronomy, Chemistry, and Earth Sciences) together with some restructuring of the modules took effect for the 2008-09 initiated by a thorough review by the Interdisciplinary Curriculum Committee in 2007-08. The goal is to develop an attractive yet rigorous program that will attract more than the very small numbers who have taken this program to date. It is too early to determine the impact of these revisions on enrolment in materials sciences modules.

The Interdisciplinary Development Initiative (IDI) entitled “*The Interface of Science and Medicine*” received one-time funding in July 2008 to develop two undergraduate half-courses in medical physics. These second-year courses are being offered for the first time in the 2008-09 academic year (Medical Biophysics 2128A/B, “Fundamental Concepts of Medical Imaging”, started Sept. 2008; “Problem Solving Techniques in Biophysics”, starts January 2009). The Departments of Physics & Astronomy and Medical Biophysics have assumed responsibility for the ongoing administration of these courses and have included them as part of their overall departmental teaching loads. Enrolment in the first offering of the fall term course “Fundamental Concepts of Medical Imaging” is 9.

Programs and modules in Bioinformatics (a joint program between the departments of Computer Science and Biochemistry) will be reviewed under OCAV guidelines early in 2009. A sub-committee of SUUPR will undertake the review.

(ii) Graduate programs

The *Masters in Environmental & Sustainability (MES)* is an interdisciplinary graduate program (Science is host Faculty; Engineering & Social Science are participating Faculties) was approved by OCGS in summer 2007. This one-year, category 2 Masters program began operation in Sept. 2007; enrolment was 24 in 2007-08 and is 26 in 2008-09. Modest enrolment increases of perhaps 5 per year are planned for each of years 3 and 4 of planning cycle. A Steering Advisory Committee for MES was formed in Oct. 2007 and was subsequently merged with Steering Advisory Committee for the Environment & Sustainability (E & S) Initiative. A Program Advisory Committee to oversee graduate programs in E & S (MES and Collaborative Masters and PhD) was formed in the summer of 2008.

The *Collaborative Program in Environmental & Sustainability* is a revised and renamed version of the previous *Collaborative Program in Environmental Science*. The revised program was approved by OCGS in November, 2007. Enrolment for 2007-08 was 36 students and for 2008-09 (Nov. 1, 2008 count) is 37 students, consisting of 18 Masters and 19 PhD students from ~10 departments in four Faculties.

The *Planetary Sciences Collaborative Program* (involving Physics & Astronomy and Earth Sciences) was approved by OCGS in October, 2007 and began accepting students in January 2008. Current enrolment (Nov.1, 2008) is 18 (14 MSc + 4 PhD) with the potential of up to 5 additional students to start in January 2009.

The *Biomedical Engineering Program* (interdisciplinary graduate program involving Engineering, Schulich, and Science) currently has 2 students supervised by faculty in Science (one in Physics & Astronomy and one in Applied Math).

(iii) Environment & Sustainability Initiative

Background

An Interdisciplinary Development Initiative in *Environmental & Sustainability* (E & S) was approved in July 2007 and funded in the amount of \$560,000 over three years. The initiative will combine interdisciplinary graduate, undergraduate, and continuing education with research activities in the area of environment and sustainability. Over 130 faculty members from the three Participating Faculties (Science (Host), Engineering, and Social Science) as well as several other Faculties have expressed interest in participating in activities of the initiative.

Governance

This initiative is overseen and managed by a Steering/Advisory Committee (SAC) consisting of decanal and faculty representatives from the Participating Faculties plus ex officio directorship representation (Acting Co-Directors for E & S programs for 2008-09 followed by new Director for Centre for E & S in 2009-10). The SAC currently provides governance for the (non-thesis) Masters of E & S (MES) Graduate Program, the PhD Collaborative Program in E & S, Environmental Research Western (ERW) and the Undergraduate Program in Environmental Science.

Centre for Environmental & Sustainability

A longer term goal is the creation of an academic unit, tentatively a School of Environment & Sustainability. A necessary intermediate step is establishment of a non-academic unit, in this case a

formally constituted Centre. The first draft of the proposal for a Centre of E & S (CES) is currently being prepared; it is anticipated that the proposal will be submitted to the VP Research for first consideration by January 2009 with final approval expected several months thereafter. Among other things, the centre status will encode a governance model (Steering/Advisory Committee) and an administrative structure that includes a Director⁽¹⁾. The Centre will assume responsibility for the MES Graduate Program, the PhD Collaborative Program in E & S, the Undergraduate Program in Environmental Science⁽²⁾, ERW (or its successor, if any), and for leadership and facilitation of interdisciplinary and multidisciplinary research in E & S at Western and with other institutions.

⁽¹⁾ The Acting Co-Directors for Programs in E&S will become the Acting Co-Directors for the Centre for E&S once the Centre is established (anticipated winter 2009). Recruitment of a Director is underway and it is anticipated that the first Director for the Centre will be in place July 2009 or shortly thereafter.

⁽²⁾ It is anticipated that interdisciplinary undergraduate programming in Environment & Sustainability will be developed by the Centre; this new programming may subsume or replace the current program in Environmental Science.

Academic Staffing

The goal is to have four to five “core” faculty positions that will have a significant portion of workload (circa 50%, likely more for the Director) assigned to the Centre plus a greater number of affiliated faculty who will have a minor or modest portion of workload (say 10-30%) assigned to the Centre by the end of year 1 of the next 4-year planning cycle (2011-12). The core positions are described below, following a description of “affiliation”.

The process for affiliation of faculty with CES is now specified in a Letter of Understanding with UWOFA (as of November 2008). Applications for affiliation from existing faculty members will be considered by a standing CES “Appointments” Committee. Those approved for affiliation will have a formal letter of affiliation that specifies what portion of the incumbent’s workload will be performed in the home unit and in CES and the term (length) of the arrangement. The Director will assign teaching and service duties and assignable research duties or tasks in accord with the fraction of workload assigned to CES, and in consultation with the Chair of the home unit.

The so-called core faculty positions consist of: a Director, a Tier 2 NSERC CRC in environmental science recently assigned to the Faculty of Science, and two-three regular faculty positions identified in the IDI proposal. The search for the Director is in progress (short-list interviews anticipated in February 2009). The search for the CRC 2 is at the interview phase (Nov.-Dec. 2008). Given the time required to prepare a CRC application and the timing of the thrice yearly competitions, the earliest conceivable start date is January 2010 for an external candidate and somewhat earlier for an internal candidate. If selected candidate is external, offer of employment will be contingent on successful CRC application. Decisions on the timing, teaching/research areas, and the procurement of sustainable funding for the 2-3 regular faculty positions is deferred until the new Director is in place and an Academic Plan for CES has been created.

(iv) Planetary Science & Exploration Initiative

An Interdisciplinary Development Initiative in *Planetary Science & Exploration* was approved in July 2008. The main goals of this IDI are:

- Develop clear leadership in Planetary Science and Exploration research in Canada by developing linkages between the Faculties of Science, Engineering and Social Science, attracting quality students and Postdoctoral researchers;
- Promote growth in student enrolment in the undergraduate and graduate Planetary Science modules through funding for targeted outreach and curriculum development and explore ways to develop collaborative programs between Science and Engineering;
- Develop expertise in space systems design, which will attract high calibre undergraduate and

graduate students interested in this demanding area of Engineering.

The IDI proposal is intimately linked with three additional initiatives at Western:

- The Centre for Planetary Science and Exploration (CPSX), established in Aug, 2008, whose objectives are:
 - a. Develop clear leadership in Planetary Science and Exploration research in Canada by developing interdisciplinary linkages between various faculties at Western;
 - b. Create a vibrant, research-intensive learning environment, which will attract high calibre undergraduate and graduate students to Western;
 - c. Establish strong partner linkages with the Canadian Space Agency by providing a service to the CSA by running summer schools, courses, and workshops for the Canadian space community;
 - d. Form strategic partnerships with NASA, ESA, and Canadian space companies, such as MDA and Odyssey Moon;
 - e. Become Canada's only node in the newly established NASA Lunar Science Institute network and build a lunar science community in Canada;(This took effect in fall 2008.)
 - f. Establish a national Canadian Astromaterials Facility (CAF) with the infrastructure necessary to meet Canada's space exploration vision and to prepare for the return of samples from the Moon, Mars and other planetary bodies, and to allow for the handling and analysis of extraterrestrial samples already collected;
- The Canadian Network for Lunar Science and Exploration (CNLSE), established in Aug, 2008, whose main objective is to develop expertise and to train highly qualified personnel in lunar science and exploration. This will be Canada's link with NASA's new Lunar Science Institute (NLSI) network.
- The Canadian Astromaterials Facility (CAF) CFI proposal, submitted in October, 2008. The objective of this proposal is creation of a National Facility at Western for the characterization, analysis and development of sampling techniques for studying astromaterials in the 21st century.

I. External Relations

Alumni Relations and Development activities continue to be a priority for the Faculty of Science. The plan for the remainder of the current 4-year planning cycle is to:

- 1) Motivate all Departments to undertake targeted smaller-scale fundraising for specific departmental programs/activities that would appeal to potential sponsors. Obtaining external funding for selected programs/activities frees up departmental funds for other programs/activities, thus providing some relief from the budget downturn facing the University for the remainder of the planning cycle;
- 2) Advance one or two Departments from marginal participants in alumni relations and development to Departments with a systematic, sustained development program;
- 3) Continue to support, in collaboration with the University's Office of Development, the Department of Earth Sciences to achieve the fundraising goal associated with its established Initiative to Enhance Economic and Energy Resource Geology;
- 4) Increase the intensity, breadth, and effectiveness of development activity at the Faculty level in the run-up to, and opening active phase of, the upcoming University Campaign scheduled for launch in 2009;
- 5) Elevate the profile of the Faculty of Science and assist in its marketing to prospective students, staff, and faculty, to prospective providers of internship placements and post-graduation employment, to industries with science-based R&D needs, and to government.

J. Performance Indicators and Comparative Assessments

The Faculty is adopting quantitative performance indicators enabling a balanced evaluation of undergraduate programs, graduate programs, and research. Wherever possible indicators that achieve the dual purposes of self-tracking over a period of time and comparison to Faculties of Science (or equivalent unit) at the G13 and/or Ontario universities have been selected. These indicators have been selected on the assumption that the relevant data and survey results are available from other sources (normally central administration) so that the Faculty itself will not need to be involved in extensive data gathering. Appropriate baseline years for each area need to be established and it is anticipated that this will depend on the particular indicator. The parenthetical note following each indicator indicates the comparative group and the source/status of the data. The requisite data is currently assembled in the Faculty Office only for a few of the research indicators. The rest (graduate and undergraduate and some of the research indicators) is being gathered with the assistance of IPB, Research Western, and WORLD Discoveries in Dec. 2008/January 2009. The goal is to release a Faculty of Science Performance Indicator report in the winter of 2009 at which time relative strengths and weaknesses can be identified and indication given as to how address areas of poor performance and leverage areas of strong performance.

Research:

- NSERC Discovery Grant funding per eligible faculty member (G13; available from IPB; Faculty specific)
- Total NSERC funding per eligible faculty member (G13; exists but not yet available; Faculty specific)
- Average number of refereed publications per full-time faculty member (G13; Faculty specific; subject to periodic availability of data and assessment of scope of publication database).
- Ratio of full-time graduate students to full-time tenure-track/tenured faculty (G13; available from IPB; Faculty specific)
- Total number of each of contracts, patents, licensing agreements, and software releases (UWO, and possibly G13; UWO data available from Research Services and WORLD)

Graduate Education:

- Selected questions from the Graduate and Professional Student Survey (G13; available from IPB; not known to be Faculty specific):

If you were to start your graduate education over again, would you choose the same university?

If you were to start your graduate education over again, would you choose the same faculty supervisor?

Quality of your overall experience at this University?

Quality of your graduate/professional program?

The relationship between faculty and graduate students?

Quality of academic advising and guidance?

Opportunities to engage in interdisciplinary work?

- Fraction of graduate students holding major external scholarships, such as NSERC, OGS, etc. (G13 and Ontario; available from IPB?)

Undergraduate Education:

- Selected questions from NSSE (G13; survey is conducted biannually/triannually?; Faculty specific):
Mark the box that best represents the extent to which your examinations during the current

school year challenged you to do your best work.

Acquiring a broad general education

Thinking clearly and analytically

Quality of relationships with faculty members.

Overall, how would you evaluate the quality of academic advising you have received at your institution?

How would you evaluate your entire educational experience at this institution?

If you could start over again, would you go to the same institution you are attending now?

- Selected questions from Western's Survey of Graduating Students (survey is conducted annually):

Overall satisfaction with education received

Overall satisfaction- courses taught in your own Faculty

Overall satisfaction- courses taught in other Faculties

Learning experience was intellectually stimulating

Evaluation was fair

Programs had sufficient practical focus

Class participation encouraged

Instructors provided helpful feedback

Would recommend UWO to a friend