1. Executive Summary

The last three years have been good ones for the Faculty of Science. For the most part, we have met our enrollment targets for undergraduate and graduate students. The size of the local, university-age population has ensured that the quality of the entering classes (as measured by GPA) has been satisfactory. The Faculty has benefitted from the new budget allocation model, and has thus had sufficient revenues to meet its objectives. The newly renovated Chemistry wing on the Burnaby campus and the renovated Podium 2 space on the Surrey campus, both funded by the Knowledge Infrastructure Program (KIP), have enhanced undergraduate teaching and student access to lower division courses. The achievement of fundraising goals for Science in Action and the Telescope will make it possible to build our already impressive outreach activities at Burnaby further, while the success of the CIHR-funded Café Scientifique series, now in its second year, will increase our community activities in Surrey. The faculty complement (CFL’s) has remained constant after the hiring spurt in mid-decade (Graph 1), although the accompanying growth in students (AFTE’s) has seriously increased the student-to-faculty ratio in some departments (Graph 2). Despite the fact that research throughout the Faculty has remained exceptionally strong (Table 1), specific areas of research and teaching strength have been eroded in some departments due to the random nature of faculty member loss.

The next five years may be somewhat less rosy financially. Funding through student enrollment, our economic engine (96% of our revenues) is expected to stagnate or decline. Meanwhile expenses, particularly salaries and benefits (96 % of our expenditures), will continue their relentless rise. We expect that research funding, particularly through NSERC and CIHR, will become increasingly difficult to obtain; this is a particular problem in Science given our reliance on laboratory infrastructure, and our guarantees of graduate student support. Research and teaching laboratory space in two of our largest departments, Biological Sciences and Physics, has degraded to a deplorable state; there is no KIP program on the horizon to reverse this state of affairs. Economic and demographic factors will reduce the rate of faculty hiring over the next few years. Although this will allow us to preserve some of our current areas of research and teaching strength, it will make it more challenging to develop new ones. Economic uncertainty will make fundraising even more challenging than it usually is for a relatively young, comprehensive Canadian university like SFU.

Despite these challenges, the Faculty of Science is committed to maintaining research excellence, building on our impressive outreach activities and striving to become a university of choice for outstanding undergraduate and graduate students. The key is to manage our budget in a fair and transparent manner so as to preserve our core: the faculty, the staff and the infrastructure that are the keys to our on-going success. Our recruitment, communication and development activities will be increasingly crucial if we are to maintain or build the financial strength needed to attain our goals.
Graph 1:

Data to 2010/11 from Institutional Research and Planning website. Projected data from FS records on faculty turnover as of 2012/13.

Graph 2:
2. Faculty Core Activities

FACULTY OF SCIENCE AT A GLANCE

- Consists of eight departments:
  - Biological Sciences;
  - Biomedical Physiology and Kinesiology (BPK);
  - Chemistry;
  - Earth Sciences;
  - Mathematics;
  - Molecular Biology and Biochemistry (MBB);
  - Physics;
  - Statistics and Actuarial Sciences.

- Offers a full range of undergraduate honours and majors, MSc and PhD programs in all eight departments; offers numerous minors, certificates, diplomas and joint degree and specialized Masters programs (Appendix I);

- Is the second largest Faculty at SFU as measured by:
  - AFTE's
  - Number of PhD students (only a whisker behind FASS)
  - Numbers of faculty members

- Is the strongest research Faculty at SFU as measured by:
  - % faculty with grants
  - Dollar amount of research funding

- Offers a broad range of outreach activities for K-12 students and the general public (Appendix II).

Table 1 shows:
1) The % of SFU activity taking place in the Faculty of Science;
2) Percentage of Science (SFU) faculty with grant funding - below space

<table>
<thead>
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<td>Research funding</td>
<td>56</td>
<td>54</td>
<td>56</td>
<td>56</td>
<td>50</td>
</tr>
<tr>
<td>% faculty with grants (SFU)</td>
<td>89 (64)</td>
<td>92 (60)</td>
<td>94 (61)</td>
<td>94 (61)</td>
<td>95 (70)</td>
</tr>
</tbody>
</table>
3 Planning Assumptions

Universities are not exempt from the economic, social and political changes taking place in the wider community. After a decade of growth in federal funding for research and provincial funding for education, robust faculty hiring and high returns on investment, all indications are that we have entered a period of reduced – or even negative – growth. This will have an impact on the Faculty of Science, specifically:

3.1. Recruitment of talented science students will become more difficult.

- Demographic and economic changes will shrink the pool of young adults interested in a university undergraduate education;
- Technological change will increasingly allow students to acquire an education outside the traditional university campus;
- Increasing availability of quality science education and jobs in the developing world will reduce the pool of graduate students in science disciplines;
- We are behind many of our primary competitors, both locally (e.g. UBC) and nationally, in developing innovative science programs.

3.2. Uncertainty related to research funding will continue.

- The size of NSERC and CIHR funding envelopes are unlikely to keep up with inflation;
- Funding priorities in these agencies will continue to shift;
- Faculty member success rates in operating grant competitions will remain at recent, lower levels and may decline further;
- NSERC funding for research equipment will continue to shrink or be discontinued;
- The spread between the minimum and maximum grant size will continue to increase.

3.3. Requirements for accountability (institutionally, provincially and nationally) will increase.

- The provincial government will monitor university operating budgets more closely;
- Learning and performance outcome measurement will become de rigueur;
- The debate about the value of post-secondary education by government, tax-payers, parents and students will intensify;
- The federal government will monitor research expenditures more closely;
- Regulatory (e.g. animal care) and granting agencies will require yet more documentation.

3.4. The Faculty of Science budget will decline in purchasing power in the next five years.

- Faculty members will continue to delay retirement unless the financial market improves substantially.

3.5. Pay-out on endowments will remain low, and will fail to keep up with rising costs.
4 Strategic Influences (for ease of reference these are grouped - in this and subsequent sections - around teaching, research, outreach and administration/finance, recognizing that there is often overlap between and among groupings)

4.1. Opportunities:

4.1.1. Teaching:
- The new Science teaching lab space in Podium 2 on the Surrey Campus and the Chemistry wing on the Burnaby campus;
- Interest from local high schools and school boards in forging closer relationships with SFU Science;
- VPA’s commitment to improving teaching and learning through Faculty Teaching Fellow program and the Teaching and Learning Centre;
- INSPIRE program to stimulate and fund curricular review and change.

4.1.2. Research:
- Renewed Faculty commitment to Science Stores and Technical Centres;
- Discussion with VPR and VPA re managerial and budget sustainability of major research institutes: IRMACS and 4D LABS.

4.1.3. Outreach:
- The new space for Science in Action outreach activities in the renovated Chemistry wing on the Burnaby Campus;
- Funding for Science in Action facilities and telescope;
- Success of Café Scientifique program on Surrey campus, launched in 2011-12.

4.1.4. Administration/Finance:
- Reorganization and augmentation of staffing in Office of the Dean of Science:
  o Enhancement of advancement personnel in the Faculty of Science
  o Enhanced TLC resources in Faculty of Science;
- Increases in the Faculty of Science budget over the last two years due to the new budget allocation model;
- Fundraising opportunities associated with 50th anniversary of SFU.

4.2. Threats:

4.2.1. Teaching:
- Increased focus in society and provincial government on college-based training programs at the expense of university education;
- Growing emphasis on more career-oriented disciplines (health, energy, business) serviced by “boutique” faculties at the expense of core “arts and science” programs;
- Competition from more established universities for shrinking recruitment opportunities in developing countries;
- Honouring the requirements of funding agencies that provide salary support for “protected research time” while maintaining core teaching functions;
- Aging equipment and infrastructure in undergraduate teaching labs.
4.2.2. Research:
- Increased focus in society and federal government on applied research at the expense of curiosity-driven research;
- Changes in tri-council funding, specifically NSERC and CIHR;
- Shrinking capacity to cover research costs associated with Endowed Chairs;
- Poaching of high profile faculty members by institutions with higher salaries, stronger reputations, lower costs of living, perceived lower amount of teaching;
- Loss of faculty collegiality in the face of increased competition for scarce and/or targeted research resources.

4.2.4. Administration/Finance:
- Pressure from other Faculties at SFU to change budget allocation model;
- Attempts by other Faculties to take over service teaching, particularly of math and biology, to generate additional WAFTE’s.

5. Self Assessment

5.1. Strengths:

5.1.1. Teaching:
- Unique science programs (e.g. BSc in Actuarial Science, BSc in Management and Systems Science, Masters in Pest Management, MBB-Business joint major, Kinesiology);
- Three life science departments, with additional life science research and expertise in most other departments;
- History of innovative teaching (e.g. Studio physics; MSSC 180/481; teaching circles; W-courses);
- Excellent support services: Science Stores and Science Technical Services;
- Good to excellent equipment in teaching labs, well maintained by Technical Services;
- Excellent co-op programs.

5.1.2. Research:
- Unique research institutes, centres and groups, (e.g. IRMACS, 4D LABS; E2O);
- External research connections (e.g. TRIUMF, Bamfield, NRC, BCCA, ATLAS, Mitacs);
- Historically high levels of research funding (50% of SFU total);
- High percentage of faculty with external research funding (90 to 100% in most departments);
- High national and international rankings in research;
- Membership in BCNet.

5.1.3. Outreach:
- Long established outreach programs and volunteer spirit (e.g. Science in Action, Taste of Pi) – see Appendix II
5.1.4. Administration/Finance:
- Significant support functions embedded in Faculty/departments (e.g. Co-op; advancement; grants facilitation; IT);
- Healthy budget over last few years due to new budget allocation model;
- Size of faculty (second largest at SFU) provides financial buffer.

5.2. Weaknesses:

5.2.1. Teaching:
- Difficulty attracting top undergraduate students relative to UBC (reputation; lack of professional schools, and flagship programs such as Science One);
- Lower division life science courses and program are not meeting needs of multiple departments, Faculties and programs;
- Variable quality of graduate programs (funding, consistency, value-added courses; course availability; career-skill preparation);
- Not making optimal use of the Surrey campus for Science programs.

5.2.4. Administrative/Financial:
- Outdated and/or unclear operating procedures and policies (retention awards; teaching buy-outs; teaching remission; sessional and TA allocation; budget allocation);
- Lack of good enrollment and budget management systems;
- Lack of transparency and cooperation in planning financial sustainability;
- Uneven distribution of support functions within Faculty and/or sub-optimal coordination within Science and between Science and other units (e.g. Student Services, co-op, advising, IT, technical services, budget administration/allocation).

Summary of SWOT analysis:

The Faculty of Science is entering the next five-year period in a position of considerable strength, due in large part to the excellence of our faculty and staff, our vibrant research programs, the health of our budget situation compared to other Faculties at SFU, the improvements to our facilities that were made possible by the KIP program, our recent successes fundraising for outreach programs, and the high demand for our academic programs. Our primary challenges will be to maintain and build our research strength during a period when tri-council funding is unlikely to increase and the rate of faculty hiring will certainly decrease, and to provide the quality of programs and infrastructure that will allow us to remain competitive in the post-secondary education market.
6. **Efficiencies**

If we are to maintain our excellence in research and education during a period of low growth and financial restraint, strategic planning is essential at all levels. The creation of new courses or programs will have to be accompanied by the suspension of others. It will be crucial to develop faculty hiring plans around areas of current and future research strength, available infrastructure and future teaching needs rather than simply focusing on replacing faculty members who have left. Fund-raising opportunities will have to be kept in mind when considering areas for growth, and we should never miss an opportunity to raise the profile of SFU Science in the community and in government. Specific efficiencies include:

6.1. **Teaching:**

- Examine the lower division life sciences curricula for opportunities to harmonize course offerings among the three departments;
- Explore options for more effective delivery of graduate courses (e.g. encouraging inter-departmental course offerings to optimize the student/faculty ratio);
- Plan for optimal use of the Podium 2 facilities on the Surrey campus;
- Develop a sustainable program for on-going equipment upgrades in teaching labs.

6.2. **Research:**

- Continue to optimize cost recovery in ancillary units (e.g. Science Stores and Technical Centre) without imposing unreasonable financial or administrative burden on researchers;
- Strengthen research links with BCCA to capitalize on joint faculty positions;
- Improve financial sustainability of major Research Centres and Institutes.

6.3. **Outreach:**

- Harmonize multiple outreach programs to avoid overlap and/or lacunae;
- Track success of outreach programs;
- Develop sustainable budgets.

6.4. **Administrative/Financial:**

- Continue the overhaul of the Faculty of Science budget with the goal of ensuring sound financial management, transparency, accountability, needs-based planning and outcome assessment;
- Align enrolment management with budget planning;
- Assess the staffing needs of the 8 departments, particularly around advising, IT, and technical support, adjusting where necessary;
- Optimize space allocations throughout the Faculty to optimize renovation funds;
- Develop procedures for expediting document-flow and task management throughout the academic year.
7. **Faculty Objectives**

The objectives outlined in this section are designed to provide a guide to the development of the entire Faculty. They are not specific to individual departments or groups of departments. They are aspirational, not prescriptive. Recommendations on faculty and staff hiring, undergraduate curriculum development, changes to graduate programs and allocation of space and resources will continue to originate within departments, and be shaped by departmental culture. These objectives are broadly consistent with the Academic Plans of the eight departments and of the Vice-President, Academic, and align with the goals of the university as outlined in the President’s Strategic Vision document.

7.1. **“Student-Centered”**

**Objective:** Make SFU Faculty of Science a destination of choice for outstanding undergraduate and graduate students in the Lower Mainland and beyond.

- Develop or enhance unique, high profile programs;
- Develop a culture of continuing curriculum improvement and development;
- Augment graduate student funding.

**Objective:** Facilitate students’ career goals.

- Develop students’ learning skills;
- Expose students to the full range of science disciplines early in their time at SFU so that they can discover their talents and interests;
- Continue to improve opportunities for experiential learning (undergraduate labs, co-op terms, research semesters);
- Explore the development of hybrid undergraduate programs (so called 4+1 programs) within the Faculty and between Faculties.

**Objective:** Remove the inter-disciplinary boundaries to scientific education and research.

- Encourage departments to collaborate on undergraduate and graduate curriculum development and delivery.

**Objective:** Enhance teaching resources.

- Develop financial mechanisms to maintain and improve equipment and infrastructure associated with undergraduate labs;
- Increase monies available for teaching programs through external fund-raising;
- Define teaching excellence in departments and reward such excellence through TPC processes;
- Consciously consider the potential for teaching excellence when hiring tenure-track faculty.
7.2. “Research-Driven”

**Objective:** Maintain research excellence.

- Integrate the Indirect Costs (IDC) of Research funding (currently ~$1.5M) into budget planning to ensure optimum support of the research environment while providing SFU- and government-mandated financial accountability;
- Develop financially sustainable procedures to facilitate maintenance, upgrading and augmentation of vital research equipment;
- In collaboration with VPR refine procedures for allocating bridging funds for researchers who have lost their NSERC and/or CIHR grants;
- Provide incentives for departments to develop internal pre-review processes for research grants, assisted where appropriate by the FS Grants Facilitator;
- Celebrate and publicize research success locally, provincially and nationally.

**Objective:** Build on current and future areas of strength.

- Capitalize on the links with external research partners, particularly in the area of graduate research training;
- Obtain increased external funding for existing endowed research Chairs;
- Continue working with VPR, VPA and VPF on the fiscal and managerial relationship between the Faculty of Science and major research centres and institutes.

**Objective:** Develop new opportunities.

- Explore possibilities for new endowed Chairs that align with departmental and Faculty priorities;
- Align departmental hiring plans with developing areas of potential strength;
- Communicate the importance of research and research funding to a wide audience.

7.3. “Community-Engaged”

**Objective:** Build on our already successful public and schools-based science outreach programs and public education.

- Establish a management structure to coordinate and track the activities of the multiple science outreach activities, provide administrative support and make them sustainable - without losing the volunteer spirit;
- Use these and other outreach activities to:
  - Connect with alumni and other supporters/donors;
  - Build community linkages;
  - Enhance student recruitment.
- In consultation and cooperation with other SFU bodies (e.g. the Office of the Registrar) work to develop joint bridge programs with school boards in Surrey, Burnaby and Coquitlam.
8. Possible Long Term Growth Scenarios

What would be the priorities for growth under the following circumstances:

a) Growth allowed in professional masters programs, with no tuition cap and no per FTE base grant from the province.

At present, the Faculty of Science does not have any differential fee MSc programs, nor has there been much talk of developing such. The proposed Master of Rehabilitation Management in the Department of Biomedical Physiology and Kinesiology (BPK), and the Masters programs in Pest Management and in Environmental Toxicology in the Department of Biological Sciences are areas to explore.

b) Expansion of the Surrey campus with funded graduate and undergraduate FTEs (this is only a possibility if the Provincial government provides funding per FTE as well as for capital expansion).

A few years ago, BPK developed plans for a program in Exercise and Nutrition in Health and Disease (ENHD) to be housed at the Surrey campus in the event of addition provincial FTE funding. The proposal was approved by Senate, and is thus ready to go. However, given the time that has elapsed since the ENHD program was first conceived, and the inevitable changes in faculty composition that have occurred, departmental interest should be re-assessed before implementation.

Ideally, plans for the expansion of the Surrey campus should flow naturally from the current campus planning process currently underway under the leadership of the Associate Vice-President, Academic. Depending on the outcome of this exercise, the Faculty of Science could adopt one of the following roles:

- Continuing to offer the current mix of programs and courses (Appendix I);
- Expanding provision of service courses to other Faculties while reducing programs;
- Retrenching to the Burnaby campus;
- Developing new flagship program(s) (e.g. an Integrated Science Program similar to Mechatronics).

Unless there is a considerable increase in research lab capacity on the Surrey campus through new buildings, it would be very challenging for Science to offer additional degree programs in Surrey, except in the areas of mathematics and statistics.

9. Communication

This plan was presented for discussion at the DAC meeting on October 30, 2012 and at the Faculty of Science meeting on October 31, 2012. It has been made available on the FS website for review and reference by faculty and staff. It will be updated on an annual basis.

10 Supporting Financial Data for New/Growth initiatives

None
### APPENDIX I: UNDERGRADUATE DEGREE PROGRAMS IN THE FACULTY OF SCIENCE

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<th>Degree type</th>
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<td>Kinesiology</td>
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<td>Cohorts</td>
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<td>Special MSc programs</td>
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<td>Masters in Pest Management (BISC)</td>
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The Faculty of Science at Simon Fraser University offers a wide range of programming to students from K to 12. These programs are in addition to other services, such as providing guest speakers at career fairs, Science Fair judges, on-site demonstrations and workshops and tours of SFU Surrey and Burnaby campus labs and facilities.

A Taste of Pi
Monthly Saturday meetings at SFU, from 9:00 to 12:30 pm, during which students will hear talks given by faculty members about their research, new and exciting developments in the mathematical sciences, and contemporary applications of mathematics. The talks will be followed by problem sessions, where students will work on exciting problems and activities related to the concepts discussed in the talks. This program is designed for students in grades 10 and 11, who have demonstrated a talent and a strong interest for mathematics.

Cost for 3 sessions is $15 (includes refreshments), Participation in the program is by invitation only, space is limited.

http://www.math.sfu.ca/K-12/atasteofpi

Meet and Greet Math
A free opportunity for students in grade 12 to experience what it is like to take a calculus course at SFU. Students and their teachers are invited to participate in this half-day event that includes: Attendance to a calculus lecture; participation in an information session conducted by current students and faculty members; participation in math activities conducted by faculty members and a visit to the math, science, and computing facilities. We also share our calculus curriculum and philosophy with the visiting teachers.

http://www.math.sfu.ca/K-12/meet_and_greet_math

Math Ambassadors
Math Student Ambassadors are SFU math student volunteers who will visit your high school to provide students with information on transitioning from high school to university with emphasis on math classes and math programs. Ambassadors will discuss what first-term math students can expect and what major/minor options are available. This program is free of charge.

http://www.math.sfu.ca/K-12/math_ambassadors

Math Camp
Every year, at the end of June or early July, students from grades 8 – 10 who have demonstrated a talent for mathematics are invited to join day camps at either our Surrey or Burnaby campus. Presentations have a hands-on component and offer experiences with mathematics drawn from a variety of backgrounds. Registration fee is $50 for the Burnaby Camp or $20 for Surrey Camp. High school teachers who have students who are interested in participating, should fill out a nomination form at:

http://www.math.sfu.ca/K-12/mathcampstudents

Math Catcher: Mathematics through Aboriginal Storytelling
The objective of the program is to promote mathematics among elementary and high school students,
as well as members of the Aboriginal communities through a series of short animated films that accompany picture books. Plots in the stories are a mixture of adventures and math puzzles and each story closes with an open-ended question that spark discussions and leads to further activities. The question at the end of each story is purposefully not answered in the story.

http://mathcatcher.irmacs.sfu.ca/content/contact

**Lasers in Action**

These workshops, targeted at **grade 8** students but open to other ages, introduce students to the properties of light, how it interacts with matter, what makes laser light special, and provide many opportunities for hands-on experiments with light. Who will be able to complete the multi-level laser obstacle course?

http://www.physics.sfu.ca/about/outreach

**TRIUMF Saturday Morning Lectures at SFU**

The popular TRIUMF Saturday Morning Lecture series is offered at SFU Surrey. The lectures are at a level appropriate for **high school** students and members of the general public. Lectures run from 10:00 am until 12:00 noon. Free parking and admission.

http://www.physics.sfu.ca/about/outreach

**Girls Exploring Physics**

A free workshop at SFU Burnaby for girls in **grades 9 and 10**. This workshop includes hands-on activities in physics sub-disciplines that female faculty at SFU specialize in: Biophysics and Condensed Matter Physics. There will also be a discussion of career opportunities available and a chance to interact informally with female physics faculty and students from SFU.

http://www.physics.sfu.ca/about/outreach/gep

**Science Spooktacular**

An afternoon of spooky science fun for **elementary**-aged students and their families. Come out and see lots of Creepy Creatures and play with some Halloween-y Hands-on science activities. We will present the Phantom Physics and Cryptic Chemistry show twice. Saturday, October 27, 2012. For free tickets, visit

http://www.physics.sfu.ca/about/outreach/spook

**Astronomy Telescope Workshops**

These free astronomy workshops are designed for **elementary** school children. If you would like to register your school for a workshop, please email slavieri@sfu.ca

**Science in Action**

Offers a free, science immersion day at SFU Burnaby or a visit to your school. Aimed at **high school** students who may have limited exposure to the sciences, students spend the day interacting with scientists and are given hands-on exposure to science in real laboratories. We are available to work with teachers to ensure that students receive hands-on training with material that fits within current curriculum. Subjects ranging from chemistry to biology to physics can be combined to suit your needs. This science immersion day introduces students to innovative research and environmentally sustainable science – for example, there is an emphasis on green chemistry in the laboratory (water is the only solvent we use for student experiments) and we do not expose the students to any potentially toxic materials. To register visit

http://www.sfu.ca/~siasfu/index.html
Starry Nights at SFU
This free event is open to the public. On these nights you can view a variety of celestial objects through our telescopes, including planets, the Moon, star clusters, nebulae, and galaxies. We also take astronomical images with a CCD camera, which are then made available for download. You are also welcome to bring your own binoculars or portable telescope.
http://www.sfu.ca/starrynights

High school physics lectures by SFU faculty
Bring SFU faculty to your school for free lectures ranging from “The Physics of Life”, “Cosmology for curious minds” to “Particle Physics: How do you study what you can’t see?” and more. Please allow several months lead-time.
http://www.physics.sfu.ca/about/outreach

Workshops for High School students
A limited number of presentations to individual high schools are available on a first come, first served basis. These include an overall presentation on undergraduate studies in physics at SFU, followed by some exciting physics demonstrations and hands-on activities. These presentations can be performed at your school, or at SFU, Burnaby.

Email Simon Watkins at physics-outreach@sfu.ca

Earth Sciences
K to grade 5 children are welcome to come to the Earth Sciences lab at the Burnaby campus to spend an hour and a half working through stations that involve them in the hands-on fun of Earth Sciences.
http://www.sfu.ca/earth-sciences/events/outreach.html

University Science Transition Experience Program (USTEP)
This new program allows qualifying high school students to receive high school credit for attending specially designed seminars offered by SFU’s Faculty of Science. Developed in consultation with local school districts, this is a free program that allows students enrolled in an advance placement or independent studies program to enrich their high school education with an experience based on their capabilities and interests. Students select a topic based on the subject material discussed at the monthly lectures and propose and conduct a month long project with mentorship and performance assessments set by their teacher. Lectures are held on the first Tuesday of the month at the Burnaby campus serves to expose students to the university environment.
http://www.sfu.ca/science/sciadean

Let’s Talk Science
SFU is proud to work with this award-winning, national, charitable organization to deliver science programs that turn children and youth on to science with fun, exciting hands-on/minds-on activities that improve their understanding of physical and life science, mathematics and technology. These free programs are available to elementary and high schools and are conducted by volunteer university science students.
http://www.sfu.ca/science/outreach

Experimental Chemistry for Us (EC4U)
This free program provides access for K-7 students to hands-on science skills right in your own classroom. EC4U directly involves elementary teachers in the planning of the experiments so that they’re suitable to what the children are being taught at their particular school. To arrange your school visit,
http://www.sfu.ca/~slavieri/EC4U/home.htm

Math Challengers
This competition program promotes mathematics achievement for students in Grades 8 and 9 by having school math teams compete with each other at local, regional and provincial tournaments. Teachers, volunteers and former student participants coach competitors beginning each fall and continuing throughout the year, either as part of in-class instruction or as an extra-curricular activity.
http://www.apeg.bc.ca/mathchallengers/

Programs for teachers
Development of Instructional Resource Package modules for BC elementary school teachers
We have developed some simple hands-on physics activities for elementary school teachers to consider using in their classrooms that are compatible with BC Ministry of Education learning outcomes. Experiments that are available for your use include: solar pizza oven, nutty putty, the penny balance and the Kleenex slide.
http://www.physics.sfu.ca/about/outreach

SFU Math Camp for Teachers
The Camp is designed for teachers who teach mathematics in middle and high school. The activities, led by John Mason (Open University, UK), will explore types of mathematical reasoning, how they are used in various domains of mathematics: arithmetic, algebra, geometry, and how we use mathematical thinking in solving word problems. Workshops and discussions will provide the opportunity to reflect, to prepare tasks for students, and to observe students from our camp for students working on these tasks. The camp registration fee is $100. Includes two books, and lunches and refreshments.
http://www.math.sfu.ca/K-12/mathcampteachers

Changing the Culture Conference
This annual conference is free, but space is limited, and therefore registration is required. Co-sponsored by the Pacific Institute for the Mathematical Sciences, this yearly event focuses on different themes regarding the teaching of math at the high school and post secondary level.
http://www.pims.math.ca/educational/changing-culture