

**SENATE**

**MEETING DATE:** *August 23, 2010*

**AGENDA #:** *3.8*

**PRESENTED BY:** *Dana Cserepes*

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***Issue:*** Approval of a full program proposal for a Bachelor of Science in Health Science

***For approval:*** THAT Senate approve the full program proposal for a Bachelor of Science in Health Science

Full Program Proposal

*Bachelor of Science  
in Health Science*

Faculty of Science  
and Horticulture

Kwantlen Polytechnic University

(August, 2010)

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## Part 1 - Executive Summary

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### a) An overview of the organization's history, mission and academic goals

Founded as a community college for the South Fraser Region in 1981, subsequently granted university college status in 1995, and university status in 2008, Kwantlen Polytechnic University has provided outstanding undergraduate education for more than twenty-five years. Undergraduate degrees have been offered at Kwantlen since 1996, along with a wide array of diplomas, associate degrees, certificates and citations in different fields of study. The university continues to prepare its students for successful careers as well as helping them develop the skills and critical awareness to be responsible citizens and community leaders. Today, Kwantlen serves approximately 17,500 students each year and is the fourth largest university in British Columbia.

Designated as a "special purpose teaching university", Kwantlen Polytechnic University was specifically directed to serve the regions encompassing Langley, Surrey, Delta and Richmond. Across its four main campuses, Kwantlen takes up its role as B.C.'s polytechnic university by offering in excess of 130 programs spanning such diverse educational areas as Trades, Vocational, Preparatory, Professional, and Academic. As a leader in innovative education, Kwantlen creates relevant and engaging programs that integrate a broad-based university education, community service opportunities, undergraduate and applied research experience, and essential skills practice. The learning culture at Kwantlen is learner-focused, academically rigorous, innovative, interdisciplinary and socially responsible.

Arising from its commitment to serve the Fraser Region, Kwantlen offers all learners, regardless of background and preparation, and from across the country and abroad, opportunities to achieve the highest standards of academic performance. Access and support services, multiple entry points, and bridging programs are examples of this commitment. Transition programs, international education, workplace experiences and continuing education are also part of Kwantlen's commitment to lifelong learning across a broad range of educational options.

Our university culture is based on critical inquiry, collegial debate, knowledge generation, freedom of expression, diversity, and environmental stewardship and sustainability.

See the Mission & Mandate document at: <http://www.kwantlen.ca/mission/mission-mandate.html#>.

### b) Proposed credential to be awarded, including the level and category of the degree and the specific discipline or field of study

Bachelor of Science in Health Science.

### c) Location

The B.Sc. in Health Science program will be offered on Kwantlen's Surrey campus.

### d) Faculty(ies) or school(s) offering the proposed new degree program

Faculty of Science and Horticulture.

### e) Anticipated program start date

The anticipated start date of the program is September 2011.

**f) Anticipated completion time in years or semesters**

Students engaged in full-time study will be able to complete the Bachelor of Science in Health Science in four years or eight semesters.

**g) A summary of the proposed program**

**Aims, goals, and or objectives of the proposed program**

What distinguishes Kwantlen's Health Science degree from other Health Science degrees is the nature and extent of industry/community collaboration involving volunteer and practicum experience for students. The overarching goal of the proposed program is to support Kwantlen's mandated development of science degrees in our region by developing unique programming that addresses key gaps in science education. The underlying objectives of the proposed four-year B.Sc. in Health Science program are (1) to provide graduates with a foundation in the basic sciences which underpin knowledge application for a career in health practice, health product production and distribution, or health research, and (2) to offer a degree that includes the educational prerequisites to qualify for entry into a qualified health profession school (e.g., Medicine or Physiotherapy), a regulated alternative complementary medical college (e.g., Traditional Chinese Medicine or Naturopathy), or into post-graduate studies and research.

**Anticipated contribution of the proposed program to the mandate and strategic plan of the institution**

This Health Science degree responds to provincial government priority for targeted enrolment growth in the health sector. The proposed program is consistent with Kwantlen's *Strategic Plan* and contributes to the fulfillment of Kwantlen's *Academic Priorities 2010/2011*. The proposed program directly supports Kwantlen's strategic objective of developing new baccalaureate science degrees and increasing enrolment in Science. This degree realizes Kwantlen's mission to create an exceptional student-focused learning environment that is relevant, engaging, and collaborative by integrating applied learning and broad-based education in a manner that is inquiry-driven. It builds upon Kwantlen's core strengths in science, community and health studies, business, social sciences and humanities, by incorporating existing courses offered by these faculties/departments. The collaborative, interdisciplinary nature of the proposed new courses fulfills Kwantlen's mandate to facilitate knowledge generation through discovery, creativity, and application. The B.Sc. Health Science offers a number of obligatory science and health science courses to provide the necessary core foundation, as well as sufficient course choices to help students make decisions as to their career pathway.

**Linkages between the learning outcomes and the curriculum design, an indication whether a work experience/work place term is required for degree completion, and if so a description of the purpose and role of the work experience within the program**

The B.Sc. in Health Science is designed around a core of required basic science and health science courses, complemented by health science and open electives that not only provide graduates with a solid science foundation but, most importantly critical health research, communication, and management skills for future success.

The proposed degree will provide graduates with the Knowledge and applied skills to enable careers in health care and research practice, as well as providing the prerequisites to qualify for entry into health professional schools or graduate studies. The new science and health science courses will build Kwantlen's capacity to expand its offerings in science.

### **Potential areas/sectors of employment for graduates and/or opportunities for further study**

The B.Sc. in Health Science program prepares students for public and private sector careers in health research, health practice, health product production and distribution, and health management, and for entry into schools of health or graduate studies.

### **Delivery methods**

Students may enroll in full or part-time studies for the B.Sc. in Health Science degree. Some of the lower level courses are also offered in evening classes. All new course developers will be encouraged to explore on-line and distance delivery methods. With the exception of the new health science courses, the lower level courses will be delivered in a lecture/tutorial format that emphasizes problem-based learning. The lower and upper level health science courses will combine lectures, guest speakers, and exploratory (Socratic) seminars that promote the development of learning skills in critical thinking, research, and communication. The curriculum of these courses will be integrated to provide applied and interactive interdisciplinary learning.

### **Program strengths**

- Provides the knowledge and skills for employment in health practice, health research, health product production and distribution, and health management
- Innovative programming that meets requirements to qualify for entry into schools of health/medicine and/or graduate studies
- Deals with issues specific to the health sciences
- Supports Kwantlen's development of science degrees
- Will increase science course and program enrolment
- Maximizes utilization of existing resources in terms of faculty, courses, and support services
- Provides a solid grounding in the basic sciences and health sciences as well as a liberal arts education
- Overlapping courses with the B.Sc. Biology Major to increase student options

### **An overview of the level of support and recognition from other post-secondary institutions, and relevant regulatory or professional bodies, where applicable, and plans for admissions and transfer within the British Columbia post-secondary education system**

This program was developed in consultation with other post-secondary institutions, and relevant regulatory, professional, and industry bodies/experts.

### **Related programs in the institution or other British Columbia post-secondary institutions. Indicate rationale for duplication, if any**

Simon Fraser University (SFU) and the University of Northern BC (UNBC) offer Bachelor of Health Science (B.H.Sc.) degrees. However, other than common lower level English and science requirements, the Kwantlen B.Sc. in Health Science is distinct from these B.H.Sc. programs in terms of both learning outcomes and curriculum content. The Kwantlen region is under-represented in terms of science degrees.

#### **h) Name, title, phone number and e-mail address of the institutional contact person in case more information is required**

Contact person: Dr. Jane Hobson, Ph.D., M.Sc., B.Sc., [Jane.Hobson@kwantlen.ca](mailto:Jane.Hobson@kwantlen.ca) 604-599-2661

## Part 2 – Degree Content

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### Aims, goals, and or objectives of the proposed program

The overarching goal of the proposed program is to support Kwantlen’s development of science degrees by developing unique programming that addresses key gaps in current health science education.

Years 1 and 2 provide the core science and health science foundation and practical laboratory techniques. Year 3 is the exploratory year for choice of specialization, and Year 4 consolidation. The Health Science degree provides the ability for chosen pathways of entry to a professional health program, for entry to an alternative health program, for entry to research in graduate studies or the health care industry, or for entry into other professions in the fields of pharmaceuticals, medical products or health care.

The program is designed around a core of required basic science and health science courses, complemented by health science and open electives that not only provide graduates with a solid science foundation but also critical research, communication, and management skills for future success. The new health science courses will build Kwantlen’s capacity for other baccalaureate science degrees in the future and attract enrolment from students outside of the B.Sc. in Health Science program as well, while the general electives draw on Kwantlen’s existing strengths.

The B.Sc. Health Science program shares a “common thread” of biology courses with the B.Sc. Biology Major to allow greater freedom of choice for students, and to establish a base of courses to permit the growth of additional science offerings.

### Anticipated contribution of the proposed program to the mandate and strategic plan of the institution

In recognition of the growing need for university education in the South Fraser Region of B.C., Kwantlen is developing a range of new degree programs that reflect community, labour market and broad societal needs, and which are in keeping with Kwantlen’s mandate as a Polytechnic University. In keeping with this plan a *Science and Mathematics Program Renewal and Planning Task Force* was struck and tasked to identify strategies for raising science enrolments, to improve student success and persistence rates, and

The proposed program is consistent with Kwantlen’s *Strategic Plan* and embodies the University’s core values of learning, quality and community, in that it will provide students with a well-balanced, quality education and essential skills for future success in an inclusive program that fosters exploration, excellence and strong community relations.

This Health Science degree responds to provincial government priority for target enrolment growth in the health sector. The proposed program directly supports Kwantlen’s strategic objective of developing baccalaureate science degrees and increasing enrolments to meet the demands in underserved areas of science. This unique degree realizes Kwantlen’s mission to create an exceptional student-focused learning environment that is relevant, engaging, and collaborative by integrating applied learning and broad-based education in innovative inquiry-driven programming. It builds upon Kwantlen’s core strengths in science, community and health studies, business, social sciences and humanities, by incorporating existing courses offered by these faculties/departments. The collaborative, interdisciplinary nature of the proposed new courses fulfills Kwantlen’s mission and mandate to facilitate knowledge generation through discovery, creativity, and application. More specifically, this program contributes to the fulfillment of Kwantlen’s *Academic Priorities 2010/2011* as follows:

***Knowledge and Skills Advancement***

- It reflects community need, labour market and broad societal education needs, and is in keeping with Kwantlen's mission and mandate as a Polytechnic University.
- It provides opportunities that encourage faculty to develop new teaching interests and methodologies in keeping with the University's mandate.

***Improved Student Experience***

- It will enhance advising and mentoring for students, and provide more support to students.
- It will enhance peer mentoring that fosters student success and retention.
- It will provide student support for science career exploration, especially as it relates to upper year electives

***Quality Improvement***

- It promotes scholarship of teaching and learning throughout the university that fosters collaboration between faculty, students, and the community of health practice.
- Enhance the Library collection to match new program development and to support scholarly activity (ies).

***Increased Enrolments***

- Entry policies and admission requirements will encourage enrolments and facilitate the transfer of students from other institutions.
- The Faculty of Science Advisor will contribute to the development of effective program retention strategies.

***Growth and Innovation***

- Encourage scholarly and research activity within, and across, a range of Faculties.
- Encourage and support development of new teaching interests and methodologies.

***Improved infrastructure***

- Develop and upgrade physical infrastructure to meet, or exceed, best practices; e.g. design and pedagogical efficiency, and sustainability.
- Develop physical infrastructure that fosters faculty, departmental and program identities.
- Maintain currency with technological advances to ensure Kwantlen operates with the most cost effective modern infrastructure.

**Linkages between the learning outcomes and the curriculum design, an indication whether a work experience/work place term is required for degree completion, and if so a description of the purpose and role of the work experience within the program**

The proposed degree will provide graduates with the knowledge and applied skills to enable careers in health care and research practice, as well as providing the prerequisites to qualify for entry into health professional schools or graduate studies. The program is designed around a core of required basic science and health science courses, complemented by health science and open electives, that not only provide graduates with a solid science foundation balanced by a liberal arts education but also critical research, communication, and management skills for future success.

The linkages between curriculum design and these learning outcomes are headlined below.

### **Work experience**

The required health science curriculum was specifically designed to introduce and promote exploration of the broad spectrum of potential health science careers through guest lectures, problem-based labs, self-directed projects, and a field-based capstone research project. Building upon foundational communication, interpersonal, project planning and management skills in the health science labs, students will be encouraged to seek out volunteer and work experience opportunities to fulfill their senior project and/or directed studies course requirements. Once the program and community/professional relations become more established, it is envisioned that a formal work experience/practicum term will be phased in.

### **Fulfill educational prerequisites for entry into health professional or graduate schools**

With the appropriate selection of electives, students may fulfill the entry requirements for the majority of health profession institutions – both allopathic traditional-western medical and alternative-complementary medicine.

### **Provide a basic science foundation balanced with liberal arts education**

The required courses for the B.Sc. in Health Science program constitutes a solid foundation in the basic sciences, which may be further enhanced by the selection of additional science and health science electives. The open elective requirements ensure that the program is also balanced by liberal arts education. As they progress through the B.Sc. in Health Science program, students have increasing flexibility to customize their studies. The elective options allow students to pursue a health science education, complete health professional prerequisites, or focus on subjects of individual interest. Students accepted into the program will attend a mandatory one-day orientation where they will be informed on program options and resources.

### **Transfer knowledge and skills that facilitate entry into alternate career paths and convey a competitive advantage to all graduates by developing curriculum that fills gaps in current health science education**

Considerable external and internal consultations were conducted to identify critical gaps in current health education and to develop appropriate curriculum to address them. The new required health science courses (health science introduction, health science writing, health systems and diversity, science language, research methodology, critical evaluation, biostatistics and research project) were specifically designed to fill these gaps. Each of these courses includes problem-based tutorials were designed to promote the development of applied knowledge, real world experience, and life-long learning skills in critical analysis, research and communication. The knowledge and skills gained in these courses will provide graduates with a competitive advantage regardless of whether they pursue alternate career paths or entry into a health profession school.

### **Potential areas/sectors of employment for graduates and/or opportunities for further study**

The B.Sc. in Health Science program prepares students for entry into conventional and alternative health schools, including

- Health Research
- Chiropractic
- Dentistry
- Medicine
- Midwifery
- Naturopathy

- Nursing
- Occupational therapy
- Optometry
- Pharmacy
- Physical therapy
- Rehabilitation therapy
- Traditional Chinese Medicine
- Biomedical engineering

Dependent upon their elective choices, students may also choose to pursue graduate studies in areas as diverse as anthropology, biology, business, computer science, food science, health education, health promotion, psychology, sociology, or women's studies.

Equally important, the program will enhance direct entry into the burgeoning health science labour market. In every sector, the knowledge and applied skills acquired in the core biomedical terminology, science literacy, business, project planning and management, critical evaluation, information and knowledge management, and research courses will provide graduates with a unique competitive advantage. Dependent upon elective choices, students may have additional qualifications to facilitate alternate career paths in commercialization, management, marketing, policy, quality assurance, research and development, and technical support.

Students will gain beneficial scientific laboratory techniques and skills. They will also be exposed to discovery-based literature and laboratory research, preparing them for graduate studies and/or a research career.

### **Delivery methods**

Students may enroll in full or part-time studies for the B.Sc. in Health Science degree. All new course developers will be encouraged to explore on-line and distance delivery methods.

With the exception of the new health science courses, the lower level courses will be delivered in a lecture/lab format that emphasizes problem-based learning. The health science courses will combine lectures, guest speakers, literature research, peer-learning and self-guided learning projects.

### **Program strengths of the B.Sc. in Health Science**

- Innovative programming that addresses gaps in current health science education that meets the needs of the health-related industries, and provides the requisites to qualify for entry into health professional schools and/or graduate schools
- Addresses issues specific to the Health Sciences
- Supports Kwantlen's development of baccalaureate science degrees
- Increases science enrolments
- Maximizes utilization of existing resources in terms of faculty, courses, and support services.
- Provides a solid grounding in the basic sciences and health sciences as well as a liberal arts education

**An overview of the level of support and recognition from other post-secondary institutions, and relevant regulatory or professional bodies, where applicable, and plans for admissions and transfer within the British Columbia post-secondary education system**

This program was developed in consultation with other post-secondary institutions, and relevant regulatory, professional, and industry bodies.

***Post-secondary institutions offering related undergraduate health science programs***

Representatives from Simon Fraser University (SFU), the University of Northern BC (UNBC), and the British Columbia Institute of Technology (BCIT) were all supportive of the proposed B.Sc. in Health Science degree, recognizing that the unique curriculum would complement, rather than compete, with their health science programs. It was observed that the innovative Kwantlen B.Sc. in Health Science would address critical knowledge and geographical gaps in current health science education, providing graduates with a competitive advantage.

***Post-secondary institutions offering relevant graduate science and health professional programs***

Representatives from BC health professional programs were consulted and contributed to the development of this degree proposal via an external Expert Advisory Committee (EAC) process. These consultations included dentistry, food science, medicine, naturopathy, pharmacy, physical therapy; occupational therapy, etc.

***Regulatory, professional and industry bodies***

The bodies consulted in the development of this B.Sc. in Health Science degree include: Coastal and Fraser Health Authorities, the National Research Council (NRC), BC College of Traditional Chinese Medicine (TCM), Lifesciences BC/BC Biotech, Western Canadian Functional Food and Natural Health Product Network (WCFN), BioTalent Canada, and others.

***Plans for admissions and transfer within the British Columbia post-secondary education system***

The key characteristic of all potential applicants is an interest in health science careers. Recent high school graduates are the primary target students, however it is expected that mature and transfer students will also comprise a significant proportion of the student population. It is anticipated that this program will attract mature students who want to gain entry into a health science occupation as well as current health science workers interested in up-grading their skills and/or qualifying for entry into a health professional school. External advisors believe that health science courses will attract considerable enrolment from students in other programs, and members of the community at large.

Kwantlen students and graduates may transfer into the B.Sc. in Health Science program and have previous studies accredited towards the degree requirements. Similarly, students and graduates from other post-secondary institutions may apply for transfer credit as per Policy B. 15, *Transfer of Articulated Courses from other Post-Secondary Institutions to Kwantlen Polytechnic University* and Policy B. 15a, *Transfer Credit Approval Process*.

***Related programs in the institution or other British Columbia post-secondary institutions. Indicate rationale for duplication, if any***

Simon Fraser University (SFU) and the University of Northern BC (UNBC) offer related Bachelor of Health Science (B.H.Sc.) degrees. Kwantlen's B.Sc. in Health Science is distinct from these B.H.Sc. programs in terms of both learning outcomes and curriculum content, and will address unmet human resource needs of the health industry.

A baccalaureate science degree, the Kwantlen B.Sc. in Health Science program has rigorous science requirements throughout the four years. Designed to fill critical gaps in current health science

education, the new health science courses make the Kwantlen B.Sc. in Health Science quite distinct and unique compared to the B.H.Sc. degrees offered by SFU and UNBC.

## Curriculum Design

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### 1. List the required courses, and indicate which courses are new/to be developed.

Unique courses that distinguish this degree from ordinary health science degrees that are offered in Western Canada are

- Introduction to Health Science
- Health Science Writing
- Health Systems and Diversity
- Science Language
- Research Methodology
- Critical Evaluation
- Biostatistics
- Senior Research Project

Existing science and mathematics courses that are core foundational courses include:

BIOL 1110, 1210, 2320, 2321, 2330, 2421,

CHEM 1110, 1210, 2320, 2420

PHYS 1101, 1102, PHYS 3202

MATH 1130, 1230, 2335

Other new core and elective courses are shown in the course profile below. New courses are shown in italics and highlighted.

### Future Health Science Electives

As new upper level courses are developed by the science faculty and the B.Sc. in Health Science program matures, it is anticipated that more courses will be added to the elective list. Examples of the former may include courses such as Advanced Biostatistics (MATH), Nuclear Medicine (PHYS), Organic/Natural Product Analysis (CHEM), Immunology and Infectious Diseases (BIOL). Additional health science courses recommended for future development include Aboriginal Health, Bioinformatics, Community Health, Neurology, and/or Pathophysiology.

### B.Sc. in Health Science Course Profile for Health Professionals

The health science and open elective choices in the preceding generic program template allow the flexibility to tailor studies to fulfill the prerequisites needed for entry into health professional schools or to pursue alternate career paths in business, e-health, management, policy, social sciences or graduate studies.

**B.Sc. in Health Science Four-Year Program**

**YEAR 1**

<b><u>Term 1</u></b>	<i>HSCI 1XXX</i>	<i>Introduction to Health Science</i>	(3)	<b><u>Term 2</u></b>	<i>CMNS 1XXX</i>	<i>Health Science Writing</i>	(3)
	BIOL 1110	Introductory Biology I	(4)		BIOL 1210	Introductory Biology II	(4)
	CHEM 1110	The Structure of Matter	(4)		CHEM 1210	Chem. Energetics & Dynamics	(4)
	PHYS 1101	Physics for Life Sciences I	(4)		PHYS 1102	Physics for Life Sciences II	(4)
	ENGL 1100	Writing, Reading and Thinking	(3)		<i>One of:</i>		
					<i>MATH 1135</i>	<i>Logic and Problem Solving</i>	(3)
					PHIL 1145	Critical Thinking	(3)
					PHIL 1155	Intro to Scientific Reasoning	(3)

**YEAR 2**

<b><u>Term 3</u></b>	<i>HSCI 2XXX</i>	<i>Health Systems and Diversity</i>	(3)	<b><u>Term 4</u></b>	<i>HSCI 2XXX</i>	<i>Science Language</i>	(3)
	BIOL 2321	Cell Biology	(4)		BIOL 2421	Cellular Biochemistry	(3)
	CHEM 2320	Organic Chemistry I	(4)		CHEM 2420	Organic Chemistry II	(4)
	MATH 1130	Calculus for Life Sciences I	(4)		MATH 1230	Calculus for Life Sciences II	(3)
	<i>One of:</i>				Elective		
	ANTH 1100	Social & Cultural Anthropology	(3)				
	PSYC 1100	Introduction to Psychology	(3)				
	SOCI 1125	Introduction	(3)				

**YEAR 3**

<b><u>Term 5</u></b>	<i>BIOL 3XXX</i>	<i>H. Anatomy and Physiology I</i>	(4)	<b><u>Term 6</u></b>	BIOL 2320	Genetics	(4)
	<i>BIOL 3XXX</i>	<i>Biochemistry</i>	(4)		BIOL 2330	Microbiology	(4)
	MATH 2335	Statistics for Life Sciences	(3)		<i>BIOL 4XXX</i>	<i>H. Anatomy and Physiology II</i>	(4)
	PHYS 3202	Biophysics	(3)		<i>Two of:</i>		
	PHIL 3010	Health Care Ethics	(3)		<i>HSCI 3XXX</i>	<i>Health Law</i>	(3)
					<i>HSCI 3XXX</i>	<i>Complementary Medicine</i>	(3)
					<i>HSCI 3XXX</i>	<i>Nutrition</i>	(3)

**YEAR 4**

<b><u>Term 7</u></b>	<i>HSCI 4XXX</i>	<i>Research Methodology</i>	(3)	<b><u>Term 8</u></b>	<i>HSCI 4XXX</i>	<i>Senior Research Project</i>	(6)
	<i>HSCI 4XXX</i>	<i>Critical Evaluation</i>	(3)		<i>BIOL 4XXX</i>	<i>H. Anatomy and Physiology IV</i>	(4)
	<i>BIOL 4XXX</i>	<i>H. Anatomy and Physiology III</i>	(4)		<i>MATH 4XXX</i>	<i>Biostatistics</i>	(3)
	<i>BIOL 3XXX</i>	<i>Adv. Cell &amp; Molecular Biology</i>	(4)		<i>One of:</i>		
	<i>One of:</i>				<i>CISY 4XXX</i>	<i>Bioinformatics</i>	(3)
	<i>HSCI 4XXX</i>	<i>Pharmacology</i>	(3)		<i>HSCI 4XXX</i>	<i>Populations and Policy</i>	(3)
	<i>HSCI 4XXX</i>	<i>Herbal Medicines and NHPs</i>	(3)		<i>HSCI 4XXX</i>	<i>Health Business</i>	(3)
	<i>HSCI 4XXX</i>	<i>Gerontology</i>	(3)		BIOL 4XXX	Developmental Biology	(4)
	BIOL 3XXX	Microbiology II	(4)				
	BIOL 4XXX	Human Genetics	(4)				

NOTE: New course are in italics

**2. In an appendix, list the courses along with their calendar description and prerequisites.**

Please see Appendix A.

### **Program Delivery**

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#### **Explain the learning methodology/methodologies to be used**

Students may enroll in full or part time studies for the B.Sc. in Health Science degree. Some of the lower level courses are also offered in evening classes. Existing lower level science courses emphasize problem-based learning and are delivered in a lecture/lab format (except mathematics). New course developers will be encouraged to incorporate blended learning approaches, including on-line delivery methods.

Critical enquiry (Socratic), problem-solving, and communication skills have been embedded in the design of all the new health science courses which will be delivered in a lecture/tutorial format that emphasizes problem-based learning. The health science courses will combine lectures, guest speakers, literature research, peer-learning and self-guided learning projects.

### **Admission Requirements**

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#### **Describe the admission requirements for this program**

In addition to Kwantlen's general admission requirements, the following are required:

B or better in English 12 or equivalent

C+ or better in Chemistry 12 or equivalent

C+ or better in Principles of Mathematics 12 or equivalent

Physics 12 (passing grade) or B or better in Physics 11

Biology 11 and 12 are strongly recommended, but not required as per current practice.

### **Faculty**

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**a) List the faculty and their areas of specialization.**

Ann Marie Davison, Ph.D., B.Sc., Genetics

Leah Be Bella, Ph.D., M.Sc., B.A., Genetics

Lin Hammill, Ph.D., M.Sc., B.Sc., Mathematics Education and Real Analysis

Greg Harris, M.Sc., B.Sc., Behavioural Ecology

Jane Hobson, Ph.D., M.Sc., B.Sc., Pathology and Developmental Biology

Depani Induruggalla, Ph.D., M.Sc., B.Sc., Organic Chemistry

John Inglis, Ph.D., M.Sc., B.Sc., Philosophy and Mathematics

Xin Liu, Ph.D., M.Sc., B.Sc., Organic Chemistry

Colin McLeod, M.Sc., B.Sc., Statistics and Mathematics

Don Mathewson, M.Sc., B.Ed., B.Sc., Physics, Mathematics and Education

Pam McDonald, Ph.D., M.Sc., B.Sc., Zoology and Ethology

Heidi Richter, M.Sc., B.Sc., Wildlife Ecology and Conservation, Evolutionary Biology

Andrea Sussman, Ph.D., B.Sc., Marine Ecology/Biology

Patricia Thomas, MA., M.Sc., B.Sc., Cell Biology and Immunology, Curriculum Development

Douglas Torrance, M.Sc., B.Sc., Behavioral Ecology and Zoology

Carl Whitney, Ph.D., M.Sc., B.Sc., Animal Behaviour and Ecology

Sherry Wilson, Ph.D., M.Sc., B.Sc., Molecular Biology and Plant Biology

- b) In an appendix, provide the list of faculty along with a brief curriculum vitae for each.**  
Please see Appendix B.

### **Program Resources**

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- a) Describe the resources that will be required to mount this program including**

#### **Library resources**

The Library supports the development and implementation of the proposed Bachelor of Science in Health Science. The needs of first and second year students enrolled in this program should, for the most part, be adequately met by current print collections developed for the Sciences. However, in order to meet upper level student requirements, more electronic resources will be needed along with key periodical, monograph, and reference titles and AV materials.

#### **Computer and computer access**

New computer hardware and software will be required for the up-graded anatomy laboratory.

#### **Classrooms, laboratories and equipment**

- New anatomy and physiology laboratory facilities, related equipment, and supplies (to be shared with the BSc in Biology and the BN degree).
- Microbiology laboratory facility, related equipment, and supplies (to be shared with BSc Biology).

#### **Existing and shared resources at the University, or at other institutions, that will be used to offer the program**

Core requirements exist between the BSc in Health Science and the BSc Biology Major to enhance student choice.

- b) Provide the intended implementation schedule for the new program and evidence of the appropriateness of the schedule, given the timing of the proposal and readiness of the institution to offer the program.**

The anticipated start date of the program is September 2011.

The upper level courses will be introduced in 2013 and 2014. Most of the required courses will draw upon the expertise of current faculty to customize delivery of lessons in a health science context. Several of these courses will require interdisciplinary faculty collaboration which will be coordinated by the dean.

A staggered elective development will provide course options for students.

### **Program Consultation**

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- c) Provide a list and brief explanation of the nature of the consultations that have occurred in the development of the degree program**

#### ***Internal Consultations***

Consultations occurred with faculty and internal service/support departments, and their feedback was incorporated into the proposal.

***External Consultations***

The Dean of Science conducted preliminary consultations with head management of various health schools and/or professional regulatory bodies, and with the local health authority, to obtain feedback on support of the degree concept. These consultations were with Dr. Nigel Murray, CEO, Fraser Health Region, executive members of the BC College of Traditional Chinese Medicine, the Deans' offices of UBC schools of health and medicine, and the VP Academic of Boucher Institute of Naturopathic Medicine. Their letters of support are included in Appendix D.

An External Advisory Committee (EAC) comprised of over 30 experts from academia, industry, and government was established to solicit feedback (see Appendix C for a listing of EAC members). They provided valuable input on current educational gaps, potential career paths and related educational requirements. A consensus was built on core requirements, elective options, and recommendations regarding course requirements.

**d) Attach all written comments, both positive and negative**

Please see Appendix D for comments.

**APPENDICES FOR  
B.Sc. in HEALTH SCIENCE**

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Appendix A Courses Descriptions and Prerequisites

**Year 1**

**BIOL 1110 CR-4 Introductory Biology I**

Students will study the diversity of life on Earth, the classification of organisms, and the interactions of organisms with their environments. They will examine the structure and function of body systems in a variety of organisms.

**BIOL 1210 CR-4 Introductory Biology II**

Students will study concepts of inheritance and biological evolution. They will examine the major classes of biological chemicals, the structure and function of cells, and the processes of cellular respiration and photosynthesis. They will study the patterns and mechanisms of embryological development.

Prerequisites: BIOL 1110

**CHEM 1110 CR-4 The Structure of Matter**

Students will study the modern view of atomic structure, nuclear chemistry, theories of bonding and molecular structure, organic chemistry (properties and reactions of the major functional groups and isomerism) after a brief review of stoichiometry, gases and the treatment of experimental data. Students will also perform experiments in the laboratory.

Prerequisites: (CHEM 1105 or [Chemistry 12 with a C+]) and (MATQ 1093 or MATH 1093 or 1117 or ABEM 0011 or 0082 or MATP 1011 or PSPM 1082 or [Principles of Mathematics 12 with a C] or [Principles of Mathematics 12 with a P plus Placement Test])

Corequisites: MATH 1112 or (MATH 1111 and 1113) is strongly recommended

**CHEM 1210 CR-4 Chemical Energetics and Dynamics**

Students will learn about topics including liquids, solids and solutions, a review of redox reactions, electrochemistry, the laws of thermodynamics, equilibrium, acids and bases, ionic equilibria, and chemical kinetics. They will also perform experiments in the laboratory.

Prerequisites: CHEM 1110 and ([MATH 1112 or higher level] or [MATH 1111 and 1113] or [Principles of Mathematics 12 with a B])

**ENGL 1100 CR-3 Writing, Reading and Thinking: An Introduction**

Students will learn to apply principles of rhetoric and critical analysis in response to selected readings, which will include examples of scholarly writing and academic argument. They will develop their writing skills through exploratory writing, academic argument, and critical analyses of material from a variety of contexts.

Prerequisites: English 12 (B) or ENGQ 1099 or ABEE 0091 or ENGP 1091 or ABEE 0092 or ABEE 0097 or ENGP 1097 or Kwantlen English Placement Test or an LPI Essay score of 30 – Level 5 or (ELST 0381 & 0383 B)

**HSCI 1XXX CR-3 Introduction to Health Science**

Students will be introduced to the multifaceted field of health science and the foundations of promoting health and wellness. Concepts of health, science and health science across time will be explored from a variety of perspectives, including biological, clinical, cultural, environmental, political and socio-economic. This course will challenge assumptions and stimulate the fundamentals of critical thinking on values, beliefs, and scientific paradigms underlying these concepts, and how they influence public and

private health care, self-care, research priorities and strategies. Students will also learn the benefits of well-organized, cross-functional teams, and how they can generate innovation, productivity and level of service. Students will deal with issues such as empowerment, team building, motivation, diversity, conflict management, negotiation strategy and change.

**HSCI 1XXX CR-3 Health Science Writing**

Students will learn how to analyze audience and context in order to communicate effectively in the field of health science. They will learn basic research strategies, document conventions, teamwork strategies, health science proposal and report creation, conflict resolution approaches, and health science language usage. Students will develop their written and oral communication skills, as well as critical thinking and research skills. They will learn the principles, theories, techniques, and common formats required for writing and communicating scientific research, proposals, reports, and reviews.

**MATH 1135 CR-3 Logic and Problem Solving**

Students will study propositional and quantifier logic and apply this knowledge to solving problems and to elementary set theory, including relations and functions.

**PHIL 1145 CR-3 Critical Thinking**

Students will study the process of argument reconstruction and evaluation. They will focus on skills necessary that will enable them to distinguish argumentative from non-argumentative writing, rationally persuasive from rhetorically persuasive arguments, and strong from weak arguments. Students will be expected to analyze arguments from a variety of contexts such as newspaper editorials, advertising and surveys.

**PHIL 1155 CR-3 Introduction to Scientific Reasoning**

Students will examine the methodology behind arguments and experimentation in science, including the careful analysis of data, measurement of probability, and the formulation of various explanatory hypotheses. In so doing, they will become familiar, not only with how scientists go about their work, but with the philosophical foundations of scientific reasoning.

**PHYS 1101 CR-4 Physics for Life Sciences II**

Students will learn about electrostatic forces and fields; magnetic forces, fields, and induction; AC circuits; wave optics; quantum and atomic physics; and radioactivity. They will use computers extensively in the lab for data collection and analysis.

Prerequisites: PHYS 1100 or Principles of Physics 12 (with a C)

Corequisites: MATH 1120 or 1130

**PHYS 1102 CR-4 Physics for Physical and Applied Sciences I**

Students will learn about statics, dynamics, oscillations, mechanical waves and sound. They will use computers extensively in the lab for data collection and analysis.

Prerequisites: PHYS 1101 or PHYS 1120

Corequisites: MATH 1220 or 1230 or 1240

**Year 2**

**ANTH 1100 CR-3 Social & Cultural Anthropology**

Students will study the interrelationships among culture, community and well-being. They will examine the diversity of human thought and behaviour in cross-cultural perspective. Students will focus on topics

such as ethnography, gender, marriage and kinship, culture and adaptive strategies, social and political organization, religion and world view, and globalization.

**BIOL 2321 CR-4 Cell Biology**

Students will examine the ultrastructure of the eukaryotic and prokaryotic cell along with molecular activities associated with these structures. They will also identify and understand the experimental techniques and data that support the current view of cell structure and function. Students will develop considerable skill in the preparation of materials for microscopic examination.

Prerequisites: BIOL 1110 and 1210 and CHEM 1110

**BIOL 2421 CR-3 Cellular Biochemistry**

Students will learn the patterns and reactions of cellular metabolism with particular attention to the structure and function of proteins, the mechanisms of reactions, and the interrelationships and control of catabolism and anabolism.

Prerequisites: BIOL 1110 and 1210 and 2321 and CHEM 2320

Corequisites: CHEM 2420

**CHEM 2320 CR-4 Organic Chemistry I**

Students will study the fundamental aspects of modern organic chemistry as illustrated by the structure, physical and spectroscopic properties and reactions of alkanes, cycloalkanes, alkenes, dienes, alkynes, halogen compounds, alcohols, ethers, aldehydes and ketones. They will also perform experiments in the laboratory.

Prerequisites: CHEM 1210 (or CHEM 1110 with a B or better)

**CHEM 2420 CR-4 Organic Chemistry II**

Students will study the structure and reactions of aromatics, polycyclic aromatic and heteroaromatic compounds, and their enolates, and an introduction to the chemistry of fats, carbohydrates and proteins. They will also perform experiments in the laboratory. Note: This course is a continuation of CHEM 2320.

Prerequisites: CHEM 2320

**HSCI 2XXX CR-3 Health Systems and Diversity**

Students will learn to compare and contrast public health care, private health care, and self-care in Canada, including the basic principles of western allopathic and complementary alternative medical practice. Students will become aware of the many beliefs and values that emerge out of Canada's multicultural environment, including ancestral and aboriginal, and how and when to respect these beliefs and values in the delivery of safe and effective health and preventative health care. The course will explore avenues that respect gender and age sensitivities and needs. The structure, function and evolution of health systems will be examined in the context of organization, resources, access, utilization, prevention, health promotion, education and research.

**HSCI 3XXX CR-3 Science Language**

Students will be taught to understand the linguistic principles underlying scientific terminology and learning the basic vocabulary of science provides students with universal career advantages and life-long learning skills. They will be introduced to the Greek and Latin constructs upon which science language is based. Students will learn to identify, articulate, and spell classic nouns, prefixes, and suffixes. They will

learn how to translate lay language into scientific terminology and vice versa, how to deconstruct bio-medical terminology into lay terms.

**MATH 1130 CR-3 Calculus for Life Sciences I**

Students will study differential calculus and its applications to biological sciences. In particular, they will study limits and differentiation of algebraic and elementary transcendental functions, with applications to graphing, optimization, and growth and decay.

Prerequisites: MATH 1112 or (MATH 1111 and 1113); or Principles of Mathematics 12 with a C+ or better; or Principles of Mathematics 12 with a C plus Mathematics Placement Test

**MATH 1230 CR-3 Calculus for Life Sciences II**

Students will study integral calculus and its applications to biological sciences. In particular, they will study the indefinite and definite integral, functions of several variables, differential equations, and probability theory, with applications to biological problems.

Prerequisites: MATH 1140 with a C+ or better or MATH 1120 or MATH 1130

**PSYC 1100 CR-3 Introduction to Psychology: Basic Processes**

Students will study topics related to basic psychological processes. They will critically examine areas such as the biological basis of behaviour, sensation, perception, states of consciousness, learning and memory. Students will learn about the historical and philosophical contexts behind the development of psychology and the research methods used by psychologists.

**SOCI 1125 CR-3 Introduction to Society: Processes and Structures**

Students will learn essential concepts, theoretical perspectives, and methods used in the discipline of sociology. They will explore some of the current sociological research on topics including culture, media, deviance, gender, ethnicity, globalization, family, religion, education, and social inequality. Students will, above all, critically examine assumptions we make about social life and will develop informed views on social issues that are important in their own lives and the lives of others in local, national, and international communities.

**Year 3**

**BIOL 2320 CR-4 Genetics**

Students will examine the principles of heredity, transmission of traits, exchange of genetic information, mutation, linkage, gene action and recombinant DNA technology, with emphasis on problem solving. They will acquire a variety of laboratory skills including sterile techniques, isolation of DNA, electrophoresis and photo microscopy.

Prerequisites: BIOL 1110 and 1210

**BIOL 2330 CR-4 Microbiology**

Students will study a variety of microorganisms including bacteria, fungi, algae, protozoa, and viruses. They will examine several aspects of microorganisms, including diversity, structure and function, metabolism, growth, reproduction and genetics.

Prerequisites: BIOL 1210

Corequisites: CHEM 1110 or ENVI 1106

**BIOL 3XXX CR-4 Molecular Biochemistry**

Students will study the structure, function and metabolism of lipids, steroids, amino acids and nucleotides. Students will also expand their knowledge of the biochemistry and molecular biology of replication, transcription and gene regulation.

Prerequisites: BIOL 2321, BIOL 2421, CHEM 1210, 2320, 2420.

**BIOL 3XXX CR-4 Human Anatomy and Physiology I**

Students will learn basic properties of human tissue types and organs. This will include an overview of human homeostasis involving fluid and electrolyte balance, endocrine and nervous system control. Students will also explore the basic principles of pharmacology and pathology. Students will then apply these basic principles to a study of the integumentary system and selected disorders and drug actions related to this system. In the laboratory portion of the course, students will be introduced to state of the art techniques related to the topics covered in the course, including histology, electrolytes, and nerve impulse conduction.

Prerequisites: BIOL 2321 and BIOL 2421 and CHEM 2420.

**BIOL 4XXX CR-4 Human Anatomy and Physiology II**

Students will study the human skeletal, muscular, cardiovascular and respiratory systems and selected disorders and drug actions related to these systems. In the laboratory portion of this course students will employ state of the art techniques related to the human skeletal, muscular, cardiovascular, and respiratory systems. These techniques will include anatomical, histological and physiologic studies.

Prerequisite: BIOL31XX

**HSCI 3XXX CR-3 Health Law**

Students will learn the legislation and practice codes that govern within the health care system in Canada, with a specific focus on British Columbia, the BC Health Care Act, and the professional bodies that govern the health professions. Examples of recent challenges and litigations will guide discussion throughout the course to familiarize students to the realities and responsibilities of employees and professionals within the health science and the health care system.

**HSCI 3XXX CR-3 Complementary Medicine**

Students will learn to undertake an evidence-based evaluation of complementary, alternative and integrative approaches to medicine. Modalities discussed will include First Nations Healing, Traditional Chinese Medicine, Ayurveda, Naturopathy, Western Herbalism, and selected Body and Mind Therapies.

**HSCI 3XXX CR-3 Nutrition**

Students will learn the fundamentals of energy and macronutrient metabolism, including vitamin, mineral, and functional nutrition, and their role in maintaining and promoting health. Nutritional requirements and dietary patterns of healthy individuals throughout their life span, and evidence-based examination of the role of nutrition in the prevention of chronic disease will be discussed. Variations in dietary practices, such as naturopathy, vegetarian, religious and "cult," will be introduced and compared.

**MATH 2335 CR-3 Statistics for Life Sciences**

Students will learn statistical techniques and their application to life sciences. They will study descriptive statistics, elementary probability, random variables, probability distributions, in particular, the binomial,

normal, t and chi-square distributions, confidence intervals and hypothesis testing for population means, proportions and variances, as well as for differences in population means and proportions. Students will also study linear regression.

Prerequisites: MATH 1130 or 1120 or 1140

**PHIL 3010 CR-3 Health Care Ethics**

Students will learn various ethical and meta-ethical theories and will apply them to moral dilemmas in health care at the clinical, professional, and organizational levels. They will analyze various case studies that will help them develop competencies in moral reasoning as it relates to personal, professional, and societal values, including, but not restricted to, the abortion and euthanasia debates, patient autonomy and the right to refuse treatment, two-tier health care, allocation of scarce resources, patient abuse and management of patient behavior, alternative therapies, and the patient / care giver relationship. Students will study the professional code of ethics for health professions, and the responsibility of the health disciplines in advocating for improved health care and patient safety.

**PHYS 3202 CR-3 Biophysics**

Students will study the biomechanics of the skeletal system, the strength of materials as it applies to the human body, the fluid dynamics of the circulatory system, diffusion and Brownian motion, thermoregulation of the body, the optics and neurophysics of vision, the acoustics of the ear and the human voice, electrical models of nerve conduction, and radiation dosimetry.

Prerequisites: (PHYS 1101 or 1120) and (MATH 1120 or 1130) Note: PHYS 1220 is recommended

Corequisites: BIOL 1210

**Year 4**

**BIOL 4XXX CR-4 Human Anatomy and Physiology III**

Students will study the human urinary, digestive and nervous systems and selected disorders and drug actions related to these systems. In the laboratory portion of this course students will employ state of the art techniques related to the human urinary, digestive and nervous systems. These techniques will include anatomical, histological and physiologic studies.

Prerequisites: BIOL31XX

**BIOL 4XXX CR-4 Human Anatomy and Physiology IV**

Students will study the human immune, and reproductive systems and human embryology. Students will learn selected disorders and drug actions related to these topics. In the laboratory portion of this course students will employ state of the art techniques related to the human immune and reproductive systems and embryology. These techniques will include anatomical, histological and physiologic studies.

Prerequisites: BIOL31XX

**BIOL 3XXX CR-4 Advanced Cell and Molecular Biology**

Students will study more advanced topic in molecular cell biology: including molecular biology of cell signaling, immunology, cell cycle regulation, apoptosis, and cancer. Students will be required to read and interpret current publications in these subject areas. The lab portion of the course will involve use of advanced cell and molecular techniques such as Western Blot analysis, fluorescence microscopy, cell culture, and immunohistochemical staining.

Prerequisites: BIOL 2321, CHEM 2320, CHEM 2420

**BIOL 3XXX CR-4 Microbiology II**

Students will examine the applied and environmental roles of a variety of microorganisms. Topics may include but are not limited to: host/parasite interactions, food microbiology, immunity, epidemiology, biogeochemical cycling, waste-water treatment, bioremediation, biotechnology and genetically modified organisms.

Prerequisites: BIOL 2321, 2330

**BIOL 4XXX CR-3 Human Genetics**

Students will study several human genetic diseases, including examples of single gene inheritance (both dominant and recessive mutations) and multifactorial traits. Students will investigate the nature of the diseases at the biochemical, cellular and organismal level. Students will also learn how epigenetics, such as imprinting, can affect disease inheritance. They will study emerging fields of human genetics including pharmacogenomics.

Prerequisites: BIOL 3XXX

**BIOL 4XXX CR-4 Developmental Biology**

Students will examine the development of an organism from patterning of the embryo and generation of the correct number of cells, to cell fate determination, differentiation, and morphogenesis. They will learn about classical embryology and modern genetic approaches that are necessary to understand the molecular mechanisms regulating embryonic development. The lab portion of the course will provide students with practical skills associated with these classical and modern techniques.

Prerequisites: BIOL 3XXX

**CISY 4XXX CR-3 Bioinformatics**

Students will learn and work with patient and structure informatics systems that are employed and required in the health care profession. The course will cover basic knowledge of storage and file management capabilities and access parameters of a modern computer system, along with basic exposure to practical programming language. Students will also become aware of security issues within database systems, including disaster recovery and network intrusion, and how best to prepare for and minimize risk of such disasters. Students will be exposed to, and learn basic operations of, the office and database software used within health care.

Prerequisites: Completion of Year 2 of the Applied Health Science BSc

**HSCI 4XXX CR-3 Research Methodology**

Students will learn how to carry out research in the literature database, in the community, and within the health care profession, including basic strategies on how to make informed and sound judgments on the validity of the vast array of information available on the internet. Students will explore research paradigms, considering the theory and application quantitative, qualitative and mixed studies. Students will examine universal research components (sampling, measurement, data collection, data analysis, evidence-based decision making, and data interpretation), as well as key factors in human studies (research ethics, inclusion / exclusion criteria, blinding, placebos, compliance, adverse events, genetic and other potentially uncontrolled variables). They will learn how to design and implement a study, the basics of how to obtain ethical approval for study involving humans and other living species, how to analyze the results, how to prepare the written report, how to communicate the findings to a variety of different audiences, and how to critique.

Prerequisites: Completion of Year 3 of the Applied Health Science BSc

**HSCI 4XXX CR-3 Critical Evaluation and Evidence-Based Decision Making**

Students will learn to critically evaluate scientific literature and apply it to evidence-based decision making. They will develop advanced literature search, retrieval, and synthesis skills. Levels of evidence, systematic reviews, meta-analyses, and the translation of research findings to evidence-based medicine, informed decision making, and best practices will be examined.

Prerequisites: Completion of Year 3 of the Applied Health Science BSc

**HSCI 4XXX CR-6 Research Project**

Students will learn to integrate and synthesize the knowledge gained throughout the program. They will select a project topic that relates to the student's intended field of specialization in health care. Students will be required to organize and conduct a project with a significant component, including consideration of technical, economic and other broad-based impacts. The requirements include a written paper and oral presentation, and will include appropriate extensive literature review.

Prerequisites: Completion of Year 3 of the Applied Health Science BSc

**HSCI 4XXX CR-3 Herbal Medicines/Natural Health Products (NHPs)**

Students will learn the science of pharmacognosy; evidence-based evaluation of NHP safety, efficacy, and quality. They will examine the structure, physio-chemical properties and pharmacological activities of the major phytochemical classifications. Students will research and critically review the scientific literature on selected NHPs.

Prerequisites: Completion of Year 2 of the Applied Health Science BSc

**HSCI 4XXX CR-3 Gerontology**

Students will study the key health issues and challenges throughout the human lifespan, with an emphasis on aging. Interdisciplinary perspectives on human development and the complex interaction of physical, psychosocial, and environmental issues that influence health and well-being will be explored. They will examine factors in healthy ageing in relation to the design of the current health care system, major challenges, and capacity- building options.

Prerequisites: Completion of Year 2 of the Applied Health Science BSc

**HSCI 4XXX CR-3 Pharmacology**

Students will learn the fundamental pharmacological and toxicological principles, and in particular pharmacokinetics and pharmacodynamics. In addition, students will be provided with an overview of mechanisms of drug/toxicant action on various systems, and receptors, including signal transduction pathways. They will be introduced to the topics of pharmaco-/toxico-genetics and genomics. This course is designed to prepare undergraduates who have an interest in medicine and human health services to pursue careers in these disciplines.

Prerequisites: Completion of Year 2 of the Applied Health Science BSc

**HSCI 4XXX CR-3 Health Business**

Students will learn fundamental principles, survey potential career paths, and acquire professional knowledge and skills that are in demand throughout the health science field. They will learn business models employed in public and private sectors of health care / science, and the legislation governing these practices will be discussed. Students will learn the basic roles and responsibilities of personnel in the major functional areas of health businesses. Students will learn the basic skills of researching, setting

up and running a small business, and how to successfully market one's business to the public. The course will expose students to the basics of financial management and planning, change theory and implementation, records keeping, tax laws, liability, and the audit system. Basic skills in hiring and managing an effective supportive staff and/or establishing a partnership will include issues such as effective recruiting, negotiation, team building, conflict resolution and crisis management from the business perspective.

Prerequisites: Completion of Year 2 of the Applied Health Science BSc

***HSCI 4XXX CR-3 Populations and Policy***

Students will learn the origins, factors and conditions that determine health through the life span, and how these factors influence one another. Methods for assessing population health will be evaluated. Students will study the epidemiological factors affecting the health and illness of populations, the sources and causes of infection, the detection strategies, and the foundation and logic of interventions made in the interest of public health and preventive medicine. Case studies of pandemic outbreaks or near outbreaks will form the basis of discussion.

Prerequisites: Completion of Year 2 of the Applied Health Science BSc

***MATH 4XXX CR-3 Advanced Biostatistics***

Students will critically evaluate the strengths and weaknesses, validity challenges, and appropriate statistical methods in experimental, observational, and randomized, controlled trials (RCT). They will make a more in-depth examination of data collection, coding, analysis and interpretation. Descriptive and inferential statistics, data-mining and the influence of theory will be discussed. Principles such as norms, data exclusion, validity, scaling, and scoring will be considered. In each case, methods and challenges in the translation and transfer of the acquired knowledge will be explored. In the tutorials, common software applications used to analyze and interpret data will be learned and students will develop KT skills.

Prerequisites: Completion of Year 3 of the Applied Health Science BSc

**APPENDIX B FACULTY CURRICULUM VITAE**

**Ann Marie Davison (née Howell)**

**Education**

B.Sc. (Honours), Biochemistry, SFU	1983
Ph.D., Genetics, UBC	1989

**Experience**

Kwantlen Polytechnic University  
*Biology Instructor*  
University of British Columbia  
*Sessional Lecturer*  
Langara College  
*Temporary Faculty*

**Research**

Research Associate, Institute of Molecular Biology and Biochemistry, SFU  
Postdoctoral Research Fellow, Fred Hutchinson Cancer Research Center, Seattle, WA

**Leah R. DeBella**

**Education**

Ph.D., Genetics, University of California, Davis,	2004
M.Sc., Genetics, University of British Columbia	1998
B.A., Biology, Sonoma State University, California	1995

**Experience**

Kwantlen Polytechnic University  
*Biology Instructor*  
Vancouver Community College  
*Instructor*  
Sacramento City College  
*Instructor*  
University of California, Davis  
*Teaching Assistant*  
*Research Assistant*  
University of British Columbia  
*Teaching Assistant*  
*Research Assistant*

**Publications**

Li W, DeBella LR, Guven-Ozkan T, Lin R, Rose LS. An eIF4E-binding protein regulates katanin protein levels in *C. elegans* embryos. *Journal of Cell Biology* 2009; 187:33-42.

DeBella LR, Hayashi A, McNally F, Rose LS. *LET-711*, the *Caenorhabditis elegans* NOT1 ortholog, is required for Spindle Positioning and Regulation of Microtubule Length in Embryos, *Molecular Biology of the Cell* 2006 Nov; 17(11):4911-4924.

Tsou MF, Hayashi A, DeBella LR, McGrath G, Rose LS. *LET-99* determines spindle position and is asymmetrically enriched in response to PAR polarity cues in *C. elegans* embryos. *Development* 2002 Oct; 129(19):4469-4481.

## Lin Hammill

### Education

Graduate Certificate in Technical and Professional Communication, East Carolina University	2009
PhD, Mathematics (Mathematics Education, SFU)	1997
MSc, Mathematics, (Real Analysis), SFU	1989
BSc, Honours Mathematics, Minor Physics, SFU	1987

### Experience

Kwantlen Polytechnic University  
*Mathematics Instructor*  
Douglas College  
*Mathematics Instructor*

### Awards

NISOD Excellence in Teaching Award, 2002  
Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarship, PGS4 1990-1991  
Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarship, PGS2 1988-1989

### Publications and Presentations

Panel member, *Rigour and intuition in teaching mathematics*, Pacific Institute for Mathematical Sciences, 2002  
*Women Do Math and Ms Infinity, two projects for girls who like math*, *Women's Education/ Education des Femmes*, Volume 9, No. 1, summer 1991, p 35 - 39  
Presenter, *The development of the Polish school of mathematics between the wars*, Seventh Annual Columbia History of Science Conference, Friday Harbor, WA, 1989  
Presenter, *The transition to post secondary mathematics*, Kwantlen Secondary School Counsellor's Conference, 2000  
Presenter, *Paper Engineering and other activities for mathematics classrooms*, Catalyst (an annual conference for secondary school science teachers in BC), Burnaby, BC, 1996  
Member of the organizing committee for the Women Do Math and Ms Infinity projects of the Society for Women in Science and Technology, 1987 - 1992  
Workshop presenter, Ms Infinity conferences, Ft St John and Dawson Creek, 1990, Sechelt, 1991 and Nanaimo, 1992.  
Co-chair of the organizing committee for the Women Do Math conference, SFU, 1989  
Co-presenter, Math Anxiety Workshop, Second National Meeting of Women in Trades and

Technology, Naramata, BC, 1988

## Gregory Harris

### Education

B.Sc. Biology, U. Sydney, Australia	1978
Grad. Diploma in Education, Wollongong Institute of Education	1979
M.Sc., in Behavioural Ecology, U. Sydney, Australia	1992

### Experience

Kwantlen Polytechnic University
Biology Instructor
St. Joseph's College, NSW, Aust.
<i>Science Teacher</i>
Freeman High, NSW, Aust.
<i>Science Teacher</i>
St. Charbel's College, NSW, Aust.
<i>Science Teacher</i>
St. John's College, NSW, Aust.
<i>Science Teacher</i>
College of Natural Therapies, NSW, Aust.
<i>Biology Lecturer</i>
Laperouse Museum, NSW, Aust.
<i>Manager</i>
National Parks and Wildlife Service, NSW, Aust.
<i>Education Officer</i>
St. Patrick's College, NSW, Aust.
<i>Science Teacher</i>
D.A.V. Boys' College, Suva, Fiji
<i>Science Teacher</i>

## Jane Elizabeth Hobson

### Education

Post Doctoral Fellowship, Pathology, UBC Pulmonary Research Lab	1985
Ph.D., Pathology, Vanderbilt University, Nashville, Tennessee	1982
M.Sc., Zoology, University of New Hampshire	1972
B.Sc., Chemistry, St. Mary's College, Notre Dame, Indiana	1970

### Honours and Rewards

Parker B Francis	Predoctoral Fellowship
Parker B Francis	Postdoctoral Fellowship
Canadian Lung	Postdoctoral Fellowship

### **Additional Education**

Deutsche als Fremdsprache, Goethe Institut, Freiburg, West Germany  
*German Language*

### **Experience**

Kwantlen University College  
*Biology Instructor*

BCIT  
*Instructor*

Douglas College  
*Biology Instructor*

UBC  
*Lecturer*

University of NH  
*Teaching Assistant*

### **Research**

Research Associate, UBC Pathology Department  
Research involved biochemical, *in vivo* and *in vitro* cell and tissue studies in pathogenesis of smoking and dust related lung diseases.  
Research Associate, UBC Pulmonary Research Laboratory  
Research involved cellular and biochemical studies in pathogenesis of pulmonary vascular diseases.

### **Clinical Laboratory**

University Frauenklinik, Freiburg, Germany  
Wentworth Douglas Hospital, Dover, New Hampshire, USA

### **Publications**

Brigham KL, Parker RG, Roselli RJ, Hobson JE and Harris TR . Exchange of macromolecules in the pulmonary microcirculation. *Ann. New. York Acad. Sci.* 384:246, 1982.  
Hobson J, Wright JL, Wiggs BR, and Hogg JC. The cellular content of lung lavage in patients with COPD. *Am. Rev. Resp. Disease* 129(a), 1984.  
Hart DHL, Hobson J, Autor AP. Antioxidant enzyme content of pulmonary artery endothelial cells: Effects of subculture. *J. Free Radicals in Biology and Medicine* 1:429, 1985.  
McKeen CR, Brigham KL, Bowers RE, Harris TR and Hobson J. Saline compared to plasma resuscitation from shock in sheep: lung fluid balance. *J. Critical Care.* 1:133, 1986.  
Hobson J, Wright JL, Wiggs RB and Hogg JC. Comparison of the content of lung lavage fluid with the presence of emphysema and peripheral airways inflammation in resected lungs. *Respiration* 50:1, 1986.  
Wright JL, Hobson JE, Wiggs RB Pare PD, and Hogg JC. Effect of cigarette smoking on the structure of small airways. *Lung* 165:91, 1987.  
Hobson J, Gilks B, Wright JL And Churg A. Effects of exposure to asbestos and cigarette smoke on tracheal explants. *J Nat'l Cancer Institute.* 80:518, 1988.  
Wright JL, Hobson J, Wiggs RB, and Hogg JC. Comparison of inflammatory cell in bronchoalveolar fluid with those in the lumen of peripheral airways and alveolar airspace. *Lung* 166:75-83, 1988.  
Churg, A, Berean K, Hobson J, Wright JL. Catalase prevents cigarette smoke induced asbestos fibre penetration in rat tracheal explants. *Am J Pathology,* 135:4, 1989.

Churg, A, Hobson J, Wright JL. Effects of cigarette smoke dose and time after smoke exposure on uptake of asbestos fibers by rat tracheal epithelial cells. *Am. J. Resp. Cell Mol. Biol.* 3:265, 1990.  
Hobson J, Churg, A, Wright JL. Active oxygen Species mediate asbestos fiber uptake by tracheal epithelial cells. *FASEB J* 4:3135, 1990.  
Hobson J, Wright JL, Churg, A. Cigarette smoke causes deposition of hydrogen peroxide on tracheal epithelium. *Am. J. Pathology* 137:35, 1991.

## Deepani Indurugalla

### Education

Ph.D (Organic Chemistry), SFU	1998
M.Sc (Organic Chemistry), University of Kansas, Kansas	1994
B.Sc (Hon.) in Chemistry, University of Peradeniya, Sri Lanka	1985

### Experience

Kwantlen Polytechnic University  
*Chemistry Instructor*

Simon Fraser University  
*Sessional Instructor*  
*Research Associate*

University of Ruhuna, Matara, Sri Lanka  
*Senior Lecturer, Department of Chemistry*

University of Peradeniya, Peradeniya, Sri Lanka  
*Lecturer, Department of Chemistry*

## John Malyon Inglis

### Education

B.Sc. Honours Mathematics First Class, UBC	1973
M.Sc. Mathematics, logic, topology, UBC	1974
Ph.D. Philosophy	2000

Unclassified part-time student, Biochemistry, French, German, Theoretical Physics  
Unclassified part-time student, Spanish, French  
Unclassified student, Mathematics, Differential Geometry, Number Theory, Topology, Mathematical Physics  
Fourth-year Honours Program in Romance Studies

### Experience

Kwantlen Polytechnic University  
*Math Instructor*

Columbia College  
*Dean of Science*  
*Math Instructor*

SFU  
*External Teaching Assistant/Sessional Instructor of Mathematics*

Richmond and North Shore Adult Education Departments  
*Adult Education Instructor*  
UBC  
*Mathematics Teaching Assistant*

## Alex K. Liu

### Education

M.Sc. in Mathematical Statistics	1984	1988
B.Sc. in Applied Mathematics, China Ocean University		1982

### Experience

Kwantlen Polytechnic University  
*Math Instructor*  
University of Frazer Valley  
*Math Instructor*  
Douglas College, Math Instructor  
*Math Instructor*  
Langara College  
*Math Instructor*  
Coquitlam College  
*Math Instructor*  
Columbia College  
*Math Instructor*  
China Institute for Standardization  
*Statistician*

## Xin Liu

### Education

Ph.D, Organic Chemistry, UBC		2005
M. Sc., Organic Chemistry, Nankai University, P. R China		1998
B. Sc., Chemistry, Nankai University, P. R. China		1995

### Experience

Kwantlen Polytechnic University  
*Chemistry Instructor*  
University of British Columbia  
*Lecturer*  
*Teaching Assistant*

### Research

Postdoctoral fellow Chemistry, UBC  
Graduate research assistant, Chemistry, UBC  
Graduate research assistant, Institute of Elemental-Organic Chemistry, Nankai University,  
China

## Colin MacLeod

### Education

M.Sc., Statistics. SFU	1999
B.Sc., (first class honours) in Mathematics, SFU	1997

### Experience

Kwantlen Polytechnic University  
*Math and Statistics Instructor*

Insurance Corporation of British Columbia  
*Statistical Design & Analysis Advisor*

Fraud Analysis Unit in Special Investigations  
*Statistical advisor*

Arthur Andersen LLP  
*Senior Statistician*

## Donald J. Mathewson

### Education

DEC., John Abbott College, Montreal	1983
B.Sc., Mathematics (Honours) and Physics (Honours), McGill	1987
M.Sc., Physics, UBC	1990
B.Ed., Secondary Math, Physics, UBC	

### Experience

Kwantlen Polytechnic University  
*Physics Instructor*

Steveston Senior Secondary, School District #38 (Richmond)  
*Physics Teacher*

### Other Related

Member BC Association of Physics Teachers ([www.bcapt.ca](http://www.bcapt.ca)).  
Two terms as Vice-president and two terms as President.  
Helped organize three PD conferences annually for BC Physics/Science teachers.  
Presented BCAPT Physics Workshops in 1996, 1997, 2006, and 2007.  
Along with other BCAPT executive members and TRIUMF staff founded (2004) and organized the BCAPT/TRIUMF BC Science Teachers PD Day which runs bi-annually.

Member Canadian Association of Physicists (CAP)  
Executive - Director of Affiliate Members.  
In 1998, 2003, 2004 presented at the CAP conference - division of Physics Education.  
In 2005 co-organized the CAP Congress' One-Day Teacher Conference.  
Physics workshops at BC Science Teachers Bi-annual Catalyst Convention  
Physics workshops for School District #38 PD day

Founder, Organizer- Kwantlen Science Challenge ([www.kwantlen.ca/sciencechallenge](http://www.kwantlen.ca/sciencechallenge)).  
A Kwantlen sponsored competitive science event for BC High School students. It draws 400 students each year to compete in lab science events.

## **Pam McDonald**

### **Education**

B.Sc. Zoology, University of Toronto  
M.Sc. Zoology, UBC  
Ph.D. Zoology, UBC

### **Experience**

Kwantlen Polytechnic University  
*Biology Instructor*  
UBC  
*Sessional Instructor*  
Capilano College  
*Sessional Instructor*  
Columbia College  
*Sessional Instructor*  
Langara College  
*Sessional Instructor*

### **Publications**

Vector: Journal of the BCAMT Spring 1999 Vol. 40 No. 1 "A Mathematical Classic"  
Vector: Journal of the BCAMT Spring 2000 Vol. 41 No. 1 "Mathematical Patterns"

Executive Committee, Lower Mainland Group, Sierra Club of Canada

## **Heidi V. Richter**

### **Education**

M.Sc., Wildlife Ecology and Conservation, University of Florida,  
Gainesville, FL 2004  
B.Sc., Biological Sciences, Cornell University, Ithaca, NY 1997

### **Experience**

Kwantlen Polytechnic University,  
*Biology Instructor*

Bellevue College, Bellevue, WA  
*Adjunct Life Sciences Faculty*  
Edmonds Community College, Lynnwood, WA  
*Adjunct Life Sciences Faculty*  
University of Florida, Gainesville, FL  
*Teaching Assistant*  
Croton-Harmon School District, Croton-on-Hudson, NY  
*Substitute Teacher*  
Cornell University, Ithaca, NY  
*Teaching Assistant*  
Washington State Department of Ecology, Bellevue, WA  
Washington Conservation Corps Crew Supervisor  
United States Peace Corps, Serenje, Central Province, Zambia  
Peace Corps Volunteer Leader  
United States Peace Corps, Kalundu, Luapula Province, Zambia  
Rural Aquaculture Promotion Project Volunteer

### **Publications**

Richter, H. V. and G. S. Cumming. 2008. First application of satellite telemetry to track African straw coloured fruit bat migration. *Journal of Zoology (London)*. 275: 172-176.  
Richter, H. V. and G. S. Cumming. 2006. Food availability and annual migration of the straw-colored fruit bat (*Eidolon helvum*). *Journal of Zoology (London)*. 268: 35-44.

### **Awards**

University of Florida Alumni Fellowship  
Wildlife Graduate Student Association  
(WGSA) Service  
WGSA Award for Excellence in Master's Research  
Jennings Scholarship

## **Andrea Vera Sussmann**

### **Education**

Ph.D., (Marine Benthic Ecology) Botany Department, UBC	2000
Teacher Certification (Science, Secondary), UBC	1987
B.Sc., (Marine Biology), UBC	1985

### **Experience**

University of St. Francis Xavier, Antigonish, NS  
*Invited Researcher*  
Kwantlen Polytechnic University  
*Biology Instructor*  
Capilano College  
*Sessional Instructor*  
UBC  
*Sessional Instructor*

*Postdoctoral Fellow*  
Universidad Nacional Autonoma de México, México.  
*Postdoctoral Fellow*

## Publications

- Sussmann, A.V. and R. E. DeWreede. 2007. Relative contribution of vegetative propagation and sexual reproduction in the maintenance of *Acrosiphonia* (Chlorophyta) populations. *Phycologia*, 46: 79-85.
- Sussmann, A.V. and R. E. DeWreede. 2005. Survival of the endophytic sporophyte of *Acrosiphonia* (Chlorophyta). *J. Mar. Biol. Assoc. U.K.* 85: 1-10.
- Sussmann, A. V., R. Scrosati and R. E. DeWreede. 2005. Seasonal synchrony of a green algal endophyte, *Acrosiphonia* (Chlorophyta) with its red algal hosts, *Mastocarpus* and *Mazzaella* (Rhodophyta). *Phycologia*, 44: 129-132.
- Sussmann, A.V. and R. E. DeWreede. 2002. Host specificity of the endophytic sporophyte phase of *Acrosiphonia* (Chlorophyta) in southern British Columbia, Canada. *Phycologia*. 41: 169-177.
- Sussmann, A.V. and R. E. DeWreede. 2001. Life history of *Acrosiphonia* (Chlorophyta) in southwestern British Columbia, Canada. *Amer. J. Bot.* 88: 1535-1544.
- Sussmann, A.V. and R.E. DeWreede. 2001. Seasonality of the red algal crust 'Petrocelis franciscana' (Rhodophyta) on boulder-strewn shores of southern British Columbia, Canada. *Phycol. Res.* 49: 51-59.
- Sussmann, A.V., B.K. Mable, R.E. DeWreede and M.L. Berbee. 1999. Identification of green algal endophytes as the alternate phase of *Acrosiphonia* (Chlorophyta) using ITS1 and ITS2 ribosomal DNA sequence data. *J. Phycol.* 35: 607-614.

## D. Patricia Thomas

### Education

M.A., Faculty of Education, SFU	1986
Professional Teacher Certificate, Faculty of Education, SFU	1976
M.Sc., Biology, UBC	1974
B.Sc., Biology, UBC	1971

### Experience

Kwantlen Polytechnic University  
*Biology Instructor*

SFU  
*Sessional Instructor*

Institute of Technology  
*Biology 12 Instructor*

Okanagan Mission Secondary School  
*Teacher*

SFU  
*Team Instructor*

UBC  
*Lecturer*

## Douglas James Torrance

### Education

M.Sc. (Biology), University of Calgary	1984
B.Sc. (Zoology), University of Alberta	1979

### Experience

Kwantlen Polytechnic University  
*Biology Instructor*

Douglas College  
*Biology Instructor*

UBC  
*Sessional Lecturer*

Langara College  
*Sessional Instructor*

College of New Caledonia  
*Sessional Instructor*

University of Manitoba  
*Lab Demonstrator*

## Carl L. Whitney

### Education

Ph.D., Biology, UBC	1979
M.Sc., Biology UBC	1973
B.Sc., Biology, Iowa State University	1970

### Experience

Kwantlen Polytechnic University  
*Biology Instructor*

College of Charleston, Charleston, South Carolina  
*Associate Professor*

Capilano College  
*Sessional Instructor*

UBC  
*Lecturer*

Rockefeller University Field Research Center, Millbrook, New York  
*Postdoctoral fellow*

## Sherry M. Wilson

### Education

Ph.D., Molecular Biology, University of Calgary	1993
M.Sc., Biology, University of Calgary	1987
B.Sc., Forestry, University of Calgary	1970

### Experience

Kwantlen Polytechnic University  
*Biology Instructor*

University College of the Cariboo  
*Biology Instructor*

Selkirk College  
*Biology Instructor*

BCIT Renewable Resources  
*Coordinator, Industry Services Project*

Agriculture and Agri-Food Canada  
*NSERC Post-doctoral fellow*

UNBC  
*Sessional Biology Professor*

## **Appendix C External Consultations**

### **1. Science Task Force Consultations**

Health Science experts visited as part of Science Degree Task Force consultations:

1. Dr. Nigel Murray, CEO and Geoffrey Crampton, VP, People and Organization Development  
Fraser Health Region
2. Dr. Louise Naismith, Principal, College of Health Disciplines, UBC
3. Dr. Kristin Sivertz, Senior Associate Dean Education, Faculty of Medicine, UBC
4. Dr. Robert Sindelar, Dean and Professor, Faculty of Pharmaceutical Sciences, UBC
5. Dr. Charles Shuler, Dean, Faculty of Dentistry, UBC
6. Dr. Brenda Loveridge, Interim Head, Department of Physical Therapy, UBC
7. Dr. Tal Jarus, Head, and Mike Lee, Curriculum Coordinator  
Department of Occupational Science and Occupational Therapy, UBC
8. Dr. Mary Watterson, Registrar; Dr. Arden Henley, Chair; and Dr. Michael Chung, Vice-Chair  
College of Traditional Chinese Medicine Practitioners and Acupuncturists of British Columbia
9. Dr. Patricia Wolfe, President and Executive Director; Dr. David Scotten, Dean of Academics  
Boucher Institute of Naturopathic Medicine
10. Dr. Cidalia Paiva, Executive Director, West Coast College of Massage Therapy
11. Dr. Alan Low, Clinical Associate Professor, UBC Faculty of Pharmaceutical Sciences and CEO,  
Network Health Care (past employers include Proctor and Gamble and Servia Pharmaceuticals)

2. Bachelor of Science in Applied Health Science External Advisory Committee Members

	<b>Name</b>	<b>Title</b>	<b>Faculty/Department</b>	<b>Organization</b>
1.	Alexander Cortina	President		Boucher Institute of Naturopathic Medicine
2.	Ann Eastman	Senior Manager	Emerging Sectors	BC MAL
3.	Arden Henley	Program Chair		City University
4.	Bill Dow	Associate Dean	Health Science	BCIT
5.	Brenda Loveridge	Dean	Physical Therapy	UBC
6.	Brian Jones	HR Planning		Coastal Health Authority
7.	Brian Mori	Director	Western Region	Health Canada HPFB
8.	Charles Shuler	Dean	Dentistry	UBC
9.	Cheryl Martin	Director	Public Health Planning	BC MHLS
10.	Colette Rivet	Executive Director		BioTalent Canada
11.	Dave Scotten	Dean	Academics	Boucher Institute of Naturopathic Medicine
12.	David Fielding	Assc. Dean, Academic	Pharmaceutical Sciences	UBC
13.	Gloria Gutman	Professor Emeritus	Gerontology	SFU
14.	Graham North	Medical Devices	IRAP	National Research Council
15.	Henry Harder	Program Chair	Health Science	UNBC
16.	Jerzy Zawistowski	Program Chair	Food, Nutrition & Health	UBC
17.	Karimah Es Sabar	President		Lifesciences BC
18.	Kitty Corbett	Director	Health Science	SFU
19.	Lance Hill	Liaison Officer		Health Canada HPFB
20.	Lesley Esford	Biopharma	IRAP	National Research Council
21.	Linda Hegland	Senior Advisor	Health Science	SFU
22.	Louise Naismith	Dean	Health Disciplines	UBC
23.	Michael Chung	Vice-chair		BC College of TCM
24.	Michael Li	Managing Director		Wellgenex
25.	Mike	Curriculum coordinator	Occupational Therapy	UBC
26.	Pat Semeniuk	Regional Director	Education	Coastal Health Authority
27.	Paul Barran	Biopharma	IRAP	National Research Council
28.	Paula Brown	Director	Integrative Bioscience	BCIT
29.	Richard Hall	Director	Life Sciences	BC Innovation Council
30.	Riz Kheraj	Electronic Health	IRAP	National Research Council
31.	Ross Waddell	Director	Programs	BC Innovation Council
32.	Susan Chunick	Director	Research Admin & Dev	Fraser Health Authority
33.	Tal Jarus	Head	Occupational Therapy	UBC

Appendix D Letters of Support

THE UNIVERSITY OF BRITISH COLUMBIA



#400 - 2194 Health Sciences Mall  
Vancouver, B.C. Canada V6T 1Z3  
Tel: 604.822.5571 | Fax: 604.822.2495  
[www.health-disciplines.ubc.ca](http://www.health-disciplines.ubc.ca)

November 24, 2008

Dr. Brian Carr,  
Dean of Sciences,  
Faculty of Science, Mathematics & Applied Sciences  
Kwantlen Polytechnic University  
12666 72<sup>nd</sup> Avenue  
Surrey, BC V3W 2M8


Dear Dean Carr,

The College of Health Disciplines offers its support to Kwantlen's proposed Bachelor of Science in Health Science. As described to me, the degree will not only address both post-secondary exposure and specified course entrance requirements to medical and health and human service programs, but it would also be designed to permit employment opportunities within the health and pharmaceutical fields should admission not be achieved or the student changes his or her mind concerning career direction.

Entry to medical and health schools is very competitive, and there can be no assurance of admission. Kwantlen's proposed degree covers the courses needed for entry and adds a number that would be complimentary. Of particular interest and importance are the courses that will cover areas and topics outside the prescribed entrance requisites that are very pertinent to a medical and health profession - topics that are often marginally covered in medical or health degrees because the programs are so heavy in scientific content. Health and human service professionals must understand what being a caring professional means. They will confront complex ethical issues that will require of them advanced critical thinking, decision making and leadership analysis that leads to best-care, evidence-based solutions. They must be willing to adapt to change and be change agents. They must be willing to work effectively within a team environment. They must have effective oral, written, and, above all, listening skills. I was very impressed to hear that Kwantlen's proposed degree will attempt to cover these areas through specially designed courses.

Should you require additional advice or assistance from me or the College please do not hesitate to call.

My very best wishes,

A handwritten signature in black ink that reads "Louise Nasmith". The signature is written in a cursive, slightly slanted style.

Louise Nasmith, MDCM, MEd, CCFP, FCFP, FRCP(Hon)  
Professor and Principal  
College of Health Disciplines  
University of British Columbia

NOV 28 2008

THE UNIVERSITY OF BRITISH COLUMBIA



Department of Physical Therapy  
Faculty of Medicine  
212, Friedman Building  
2177 Wesbrook Mall  
Vancouver, B.C. Canada V6T 1Z3  
Tel: 604.822.8225  
Fax: 604.822.1870  
www.physicaltherapy.med.ubc.ca

November 25, 2008

Dr. Brian Carr  
Dean, Science & Applied Science  
Faculty of Science Math Applied Science  
Kwantlen Polytechnic University  
12666 72 Avenue  
Surrey, BC  
V3W 2M8

Dear Dr. Carr,

The Department of Physical Therapy, University of British Columbia supports in principle the creation of a health sciences baccalaureate degree at Kwantlen Polytechnic University.

As the only university professional entry program for physical therapy education in BC our Department is committed to working with all universities to ensure that students from as many BC universities as possible have access to courses that meet the pre-requisites for entry to the UBC MPT Program.

As discussed when we met, it will be imperative when Kwantlen is designing their courses that they refer to currently accepted pre-requisite courses as a guide to the rigour required in the pre-requisite courses for UBC to accept them.

Best of luck as you pursue this new program.

Yours truly,

A handwritten signature in cursive script that reads 'Brenda Loveridge'.

Brenda Loveridge, BPT, PhD  
Interim Head  
Department of Physical Therapy

THE UNIVERSITY OF BRITISH COLUMBIA



Department of Occupational Science and  
Occupational Therapy  
Faculty of Medicine  
T325-2211 Wesbrook Mall  
Vancouver, British Columbia V6T 2B5  
Phone: 604.822.7392  
Fax: 604.822.7624  
Web: [www.ot.med.ubc.ca](http://www.ot.med.ubc.ca)

To: Dr. Brian G. Carr  
Dean of Sciences  
Faculty of Science, Mathematics and Applied Sciences  
School of Horticulture  
Kwantlen Polytechnic University

Thank you for coming to meet with us to discuss the possibility of opening a baccalaureate program in the Health Sciences. I believe such a program will be beneficial for future candidates to the Master of Occupational Therapy program. Although I can not guarantee admission of all graduates of this planned program, it seems that the program will help to enable candidates to meet the admission requirements of the MOT program.

Best of luck.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Tal Jarus'.

Dr. Tal Jarus  
Department Head



*College of Traditional Chinese Medicine Practitioners and  
Acupuncturists of British Columbia (CTCMA)*

1664 West 8<sup>th</sup> Avenue, Vancouver, B.C. Canada V6J 1V4

Phone: 604-738-7100 Fax: 604-738-7171

Email: [info@ctcma.bc.ca](mailto:info@ctcma.bc.ca) [www.ctcma.bc.ca](http://www.ctcma.bc.ca)

OCT 28 2008

October 22, 2008

Dr. Brian G. Carr  
Dean of Sciences  
Kwantlen Polytech University  
Surrey Campus  
12666 – 72<sup>nd</sup> Avenue  
Surrey, B.C.  
V3W 2M8

Dear Dr. Carr

**Re: Bachelor of Science in Health Science**

On behalf of the College of Traditional Chinese Medicine Practitioners and Acupuncturists of British Columbia (CTCMA) I would like to thank you for your presentation on October 20<sup>th</sup>. CTCMA President Dr. Arden Henley, Vice-president Dr. Michael Chung and I appreciated the report and the work that has been undertaken by Kwantlen.

The CTCMA offers its support and best wishes to Kwantlen's proposed Bachelor of Science degree in Health Science. We at the College support Kwantlen's focus on providing the courses and baccalaureate credits required for admission to the medical and health programs that demand post-secondary exposure as a condition of entry. While admission to the five-year doctoral program in Traditional Chinese Medicine does not demand more than 60 credits of university achievement, graduates of Kwantlen's proposed four-year, 120-credit, degree should be well positioned for the rigour of study expected in TCM, as would also be the case for any other field of medicine or health therapy.

Yours sincerely

A handwritten signature in black ink that reads "Mary S. Watterson". The signature is written in a cursive, flowing style.

Mary S. Watterson, Dr.TCM  
Registrar



*Primum Non Nocere*

*Vis Medicatrix Naturae*

*Tolle Causam*

*Tolle Totum*

*Docere*

November 21, 2008

Dr. Brian Carr  
Dean of Sciences  
Kwantlen Polytechnic University  
12666-72<sup>nd</sup> Avenue  
Surrey, BC, V3W 2M8

Dear Dr. Carr,

Re: Bachelor of Science in Health Studies

Thank you for inviting Dr. Scotten, Dean of Academics, and myself to your presentation on September 24, 2008. We were very intrigued to learn of your proposed degree program in health sciences at Kwantlen University.

As we discussed, the Boucher Institute of Naturopathic Medicine (BINM) has recently moved to require a bachelor's degree as pre-requisite for entry into our 5000 hour naturopathic medicine program. In addition, we require specific courses and recommend several others. A health sciences degree that included our requisite courses and a good selection of our recommended courses would significantly enhance the level of preparedness of students entering our rigorous program and consequently enhance student success.

BINM offers a four year full-time program leading to the designation, Doctor of Naturopathic Medicine. We have a capacity of 140 students in total (35 per annual intake) and we currently have 139 matriculated students. In addition, we are about to welcome our first intake in January 2009 to our newly established six year part-time offering, which will accommodate up to 80 students.

Applications initiated for our 35 seats have averaged 105 over the past three years, demonstrating reasonable interest in the field and in our program in particular. Most (~70%) of our successful applicants have a bachelor's of science degree and most are from B.C. An undergraduate degree tailored to the needs of our prospect students would, I believe, be in considerable demand. Further, BINM admissions advisors would be happy to refer student inquiries to such a program as a desirable undergraduate option.

Therefore, we are happy to provide this letter of support in principle for the development of a degree program in health sciences at Kwantlen University. If I can be of any further assistance or provide any other information that may be of use in support of this initiative, please don't hesitate to contact me.

300-435 Columbia St

New Westminster

British Columbia

V3L 5N8, Canada

T: 604.777.9981

F: 604.777.9982

www.binm.org

Yours truly,

Patricia Wolfe, ND  
President & Executive Director

cc: D. Scotten, Dean of Academics

NOV 26 2008

OCT 03 2008



September 29, 2008

Dr. Brian Carr  
Dean of Sciences  
Kwantlen University College  
12666 - 72nd Ave  
Surrey, B.C.  
V3W 2M8

Dear Brian,

Please accept this letter as indicating our support in principle for the idea of the development of an undergraduate degree in Integrative Health Studies that would strengthen and enhance student preparation for entry into integrated healthcare program fields such as massage therapy.

We believe the creation of such a degree will support prospective students in acquiring the health science and liberal arts knowledge necessary to undertake our program of study and graduate at a higher level of ability and skill.

Sincerely,

Cidalia Paiva, Ph.D  
Executive Director  
West Coast College of Massage Therapy

[www.collegeofmassage.com](http://www.collegeofmassage.com)

MT New Westminster <a href="mailto:info@wccmtnewwest.com">info@wccmtnewwest.com</a>	WCCMT Victoria <a href="mailto:info@wccmtvictoria.com">info@wccmtvictoria.com</a>	CCMH Toronto <a href="mailto:info@collegeofmassage.com">info@collegeofmassage.com</a>	CCMH Cambridge   Kitchener <a href="mailto:info@collegeofmassage.com">info@collegeofmassage.com</a>	CCMH Halifax <a href="mailto:halifax@collegeofmassage.com">halifax@collegeofmassage.com</a>	CCMH Foothills   Calgary <a href="mailto:calgary@collegeofmassage.com">calgary@collegeofmassage.com</a>
513 Columbia Street New Westminster BC V3M 1A7 T 604 520 1844 F 604 520 1831 TF 1 888 449 2242	101 - 637 Bay Street Victoria British Columbia V8T 5L2 T 250 381 9800 F 250 381 9801	1124 Finch Ave W - Unit 1 Toronto Ontario M3J 3J3 T 416 736 4576 F 416 736 9382 TF 1 877 748 7800	405 Maple Grove Rd - Unit 3 Cambridge Ontario N3E 1B6 T 519 650 5533 F 519 650 5507	1306 Bedford Hwy Halifax Nova Scotia B4A 1C8 T 902 832 3268 F 902 832 1077	400 - 7330 Fisher Street SE Calgary Alberta T2H 2H8 T 403 255 4445 F 403 255 4074

Bachelor of Science in Health Science  
Full Program Proposal Appendices



"Fabian, Michael Clifford"  
<mcfabian@medd.med.ubc.ca>  
01/09/2009 02:56 PM

To <brian.carr@kwantlen.ca>  
cc "Sivertz, Kris" <ksivertz@medd.med.ubc.ca>  
bcc  
Subject Re: UBC MD Undergraduate Program

Dear Dr. Carr,

We were happy to meet with you this morning and, as promised, I am sending you a letter summarizing the key points mentioned to you at the meeting.

- While the UBC MD Undergraduate program has specific pre-requisites, the application requirements differ immensely across the country - some medical schools having no pre-requisites at all. We do not favor any degree program or institution.

- Our North American Accreditation body (LCME) emphasizes that diversity is really important in the application/selection process, and a broad education is encouraged (including the humanities and social sciences.)

- Any pre-health degree should take into account application requirements of medical programs across the country, as well as those of the allied health professions. Such a degree should provide flexibility in order that students can have a wide range of options once the degree is conferred - not just for the intention of getting into medical school.

- A comprehensive cross-country review of medical school application requirements is recommended. It should also be kept in mind that this process is dynamic and application requirements can change with time.

- We do have a comprehensive website if you wish to find out more, but the most important information was provided to you, including the academic requirements and recent statistics.

I hope this information is useful to you, and we wish you the best with your initiative.

Yours Sincerely,

Michael Clifford Fabian FRCPC, FRCSC, FACS  
Associate Dean, MD Undergraduate Program, Admissions  
Clinical Assistant Professor, Departments Pediatrics and Surgery  
Faculty of Medicine  
University of British Columbia

Kris Sivertz MD, FRCPC  
Senior Associate Dean, Education  
Clinical Professor, Department Psychiatry  
Faculty of Medicine  
University of British Columbia



*Faculty of Dentistry*  
The University of British Columbia  
www.dentistry.ubc.ca

Office of the Dean  
350-2194 Health Sciences Mall  
Vancouver, BC Canada V6T 1Z3

Tel: 604-822-5323  
Fax: 604-822-4532  
E-Mail: [cshuler@interchange.ubc.ca](mailto:cshuler@interchange.ubc.ca)  
Website: [www.dentistry.ubc.ca](http://www.dentistry.ubc.ca)

December 18, 2008

Dr. Brian Carr  
Dean of Sciences  
Kwantlen Polytechnic University  
12666 – 72<sup>nd</sup> Avenue  
Surrey, BC V3W 2M8

Re: Support in Principle of undergraduate degrees supporting application to Dentistry

Dear Dean Carr;

Thank you for visiting with me and presenting your ideas for the development of undergraduate programs that would provide the prerequisites necessary for admission to health science professional programs. Please accept this letter as indicating our support in principle for the idea of developing a Bachelor's of Science degree in Health Sciences that would prepare the graduate to apply for admission to the Faculty of Dentistry. This should enable a greater number of students to consider pursuing professional education in oral health care.

Good luck with the development of your program and we look forward to the applications of your graduates for admission to the UBC Faculty of Dentistry.

Sincerely,

A handwritten signature in black ink, appearing to read 'Charles Shuler'.

Charles Shuler, DMD, PhD  
Dean and Professor, Faculty of Dentistry

DEC 19 2008



December 2, 2008

Dr. Brian Carr  
Dean, Division of Sciences  
Kwantlen Polytechnic University  
12666 72nd Ave.  
Surrey, BC V3W 2M8

Dear Dr. Carr

In follow-up to our recent discussions I would like to take this opportunity to outline Fraser Health Authority's human resource needs and how Kwantlen's proposed degree in health science could help address those needs.

As you know, Fraser Health is one of the largest health regions in Canada and serves a population of approximately 1.5 million people – over one-third of British Columbia's population. This population is also growing at a rapid pace and the average age of our residents is increasing. Combined with a rising incidence of chronic diseases and the unique health care needs of certain population groups, it is clear that Fraser Health will continue to face considerable challenges in the years ahead achieving its vision of *Better Health, Best in Healthcare*.

One of my biggest concerns related to meeting the health care needs of our population is the shortage of health care professionals. We are striving through partnerships with community colleges, and other internal strategies, to address the shortage of nurses, therapists, and other allied health professionals.

I would welcome your thoughts on addressing our needs and also your interest in exploring a cooperative venture between our two organizations.

Please call me should you wish to discuss this further.

Yours truly,

Geoffrey Crampton  
Vice President, People, Organization & Academic Development

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E-mail from Dr. Shuler  
Dean of Dentistry  
UBC  
August 17, 2010

Dear Brian, Sorry for the delay in responding, I have been away on holiday. The proposal you forwarded has been reviewed and my responses follow your questions. Hope this helps. Regards, Chuck Shuler

Q. Do you consider that students who graduate with this B.Sc. will have a solid, broad-based foundation that would be beneficial in qualifying for admission to a/your school of health or medicine?

A. This curriculum appears to include the prerequisite courses for application for entry to dental school so, Yes, this B.Sc. would be beneficial for application to the Faculty of Dentistry at UBC.

Q. Do you consider that students who complete the B.Sc. will have a solid grounding in practical laboratory skills (courses at more than 3 credits have a lab component)?

A. This is a little more difficult to ascertain. There appear to be sufficient laboratory experiences at the basic level but the rationale for laboratories in the long run needs to be clear.

Q. Do you consider that the proposed program is sufficiently rigorous to be readily recognized by national and international institutions, and thus allow students to enter graduate school in areas related to this degree? Can you suggest some areas where this may be so?

A. The B.Sc. appears to have sufficient rigor to support application of postgraduate and professional programs. If all the stated prerequisites for admissions to M.Sc. and Ph.D. programs as indicated by the UBC Faculty of Graduate Studies are achieved then a graduate with this B.Sc. would be eligible to apply.

Q. Do you consider that a graduate of this program would be well prepared for direct entry into the workforce? What qualities or aspects of the program support your point of view?

A. This is difficult to ascertain from the document since the "work force" is so broad. I would entertain an application for a graduate of this program to be a research technician in my research laboratory, so in that sense the answer would be Yes. Whether this individual would be able to enter other aspects of the work force is beyond my area of knowledge.

Q. Using what you believe to be a "polytechnic university," do you feel this degree reflects what a "polytechnic" could offer? How so?

A. It has never been clear to me what "polytechnic university" defines. In California where I was previously the Cal Polys were very comparable to other universities and it wasn't clear that graduating from one of the Cal Polys lead to any specialized skill set other than what graduates of the U-Cals and Cal States had. I don't have much basis for giving an informed answer to this question.

August 16, 2010

Hello Dean Carr,

I would like to congratulate you on the development of a comprehensive program which will complement the already existing programs and courses at Kwantlen. In reviewing the program requirements I note that this degree would also be a strong prerequisite for a Masters degree in Genetic Counselling along with the other health discipline programs you list under "Potential areas/sectors of employment for graduates and /or opportunities for further study".

I hope the Ministry looks favourably on this program.

Kind regards,

Anita Dircks M.Sc., CCGC, CGC  
Program Director  
M.Sc. Genetic Counselling Program  
Department of Medical Genetics  
University of British Columbia  
c/o Children's & Women's Health Centre of BC  
Rm C234 4500 Oak St.  
Vancouver, BC V6H 3N1

Proposal Feedback – Rizwan Kheraj, NRC-IRAP

1. Do you consider that students who graduate with this B.Sc. will have a solid, broad-based foundation that would be beneficial in qualifying for admission to a/your school of health or medicine?
2. Do you consider that students who complete the B.Sc. will have a solid grounding in practical laboratory skills (courses at more than 3 credits have a lab component)?
3. Do you consider that the proposed program is sufficiently rigorous to be readily recognized by national and international institutions, and thus allow students to enter graduate school in areas related to this degree? Can you suggest some areas where this may be so?
4. Do you consider that a graduate of this program would be well prepared for direct entry into the workforce? What qualities or aspects of the program support your point of view?
5. Using what you believe to be a “polytechnic university,” do you feel this degree reflects what a “polytechnic” could offer? How so?

General comments:

Overall the program as defined delivers a strong set of domain knowledge instruction and skill building in the health sciences to both provide critical and foundational content and to develop curiosity-driven research skills required for the health sciences ,and other allied scientific fields.

Specific comments

1. Students with this B. Sc. Upon completing and graduating from this 4 year course will be in a good position to have either decided upon a specific career in the health sciences in administration, research, or technician-based areas, or having decided to pursue advanced education in one of the sub-fields of health sciences at the graduate studies level. In each of the above career decision cases, students should be able to meet the pre-requisite criteria for admission into schools of health science / medicine.
2. There are some considerable practical laboratory skills being taught within the 4 year program, however, more emphasis on molecular biology and DNA sequencing techniques could be introduced within this program. To ensure that students will have a solid grounding.
3. The program as defined is sufficiently rigorous to be recognized by graduate schools nationally and internationally – two areas that may require beefing up are:
  1. The area of public health – as this seems to come fairly late in the curriculum and not as much emphasis.
  2. The area of health informatics – this could be an extension of the bioinformatics
4. The 4 year program does prepare the graduate for direct entry into the health sciences workforce in several areas – as technicians, research assistants, clinical assistants / associates, and healthcare administration. This is evidenced respectively through practical laboratory work, critical evaluation and decision making, solid writing skills, and experience in research methodologies and projects.
5. This degree offers what a polytechnic could offer – good broad grounding in fundamentals coupled with strong practical but applied research.

Feedback regarding a B.Sc. in Health Science at the Faculty of Science and Horticulture at Kwantlen

We have read your proposal and would like to offer few comments:

1. We believe that your graduates who will consider our MOT program will benefit from additional social and behavioral courses. Currently it seems that there are only two 3 credit courses (PSYC 1100 and SOCI 1125) and one 100 level course (on culture and anthropology) that address social science and behavioral science. This is especially noted as compare to the amount of course hours on basic science, such as biology, organic chemistry, calculus. Though these two courses will meet the admission requirements of our program, students will definitely benefit from learning more about social and behavioral aspects of health and illness.
2. There is only one 4-credit human anatomy course (BIOL 4XXX ) that addresses musculo-skeletal system. However, at our program we require a 3 credit course fully dedicated to musculo-skeletal system. Judging from this brief course description, this course might not cover the depth and breadth of the human musculo-skeletal content that we are looking for. We will be more than happy to provide you with more in-depth information regarding our pre-requisite requirements in that area.

Please let me know if I can be of further assistance

Tal

**SUBSEQUENT NOTE**

Dean Carr contacted Dr. Jarus and confirmed that sufficient human musculo-skeletal content would be included over the 4 A&P courses, and that this would be assured in any course construction and revised Calendar course description. Likewise, the option of additional social and behavioural science choices would be assured. A contact with UBC has been identified to assist us.

Congrats, Brian, for the great development, and thanks for giving me the opportunity to comment.

I had a quick read on the program proposal. Overall it is believed to be reasonably well prepared for the purpose. A quick comment is on Page 8 mentioning Traditional Chinese Medicine (TCM). TCM is considered virtually an experience-based medicine as compared to evidence-based medicine. Do you think that it is better to use other terms such as Herbal Medicine (consistent with the course HSCI 4XXX CR-3 listed on Page 27), Chinese Medicine (CM), or Botanical Medicine?

I enclosed for your information a Wellgenex PowerPoint presentation on the difference of TCM to other medicines.

Best regards,

Michael ZC Li, MD(Hon), MSc, MBA  
Wellgenex Sciences Inc.  
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**SUBSEQUENT NOTE**

**Dean Carr will assure that the suggestions are fully considered**

FACULTY OF SCIENCE

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August 19, 2010

Brian Carr, Dean of Sciences  
Faculty of Science and Horticulture  
Kwantlen Polytechnic University  
12666 - 72nd Ave Surrey, BC V3W2M8

Dear Brian,

This is in response to your request for feedback on:

Full Program Proposal: Bachelor of Science in Health Science (August 4, 2010)

My own training is in mathematics. Consequently, I am not qualified to comment on most of the specific courses which are part of the proposal. However, for the last six years I have been responsible for a fledgling science program at SFU Surrey and for the development of plans for expanding SFU's science offerings at its Surrey campus. This experience has led me to attach great importance to what kind of postsecondary science programs high school graduates are looking for. My reactions to the proposal are informed by six years of recruiting science students for SFU Surrey, and by many conversations I have had with prospective students and their parents.

Below I address the specific points raised in your email of August 5.

- Do you consider that students who graduate with this B.Sc. will have a solid, broad-based foundation that would be beneficial in qualifying for admission to a school of health or medicine?

*Answer.* Yes. All the programs I know in the general area of health publish specific lists of prerequisites. Students in the proposed B.Sc. in Health Science will be able to include in their degree all the prerequisite courses they need.

- Do you consider that students who complete the B.Sc. will have a solid grounding in practical laboratory skills (courses at more than 3 credits have a lab component)?

*Answer.* On page 14 of the program document the "course profile for health professionals" lists 138 credits. Students who complete the 138 credits will certainly have acquired a good grounding in laboratory skills.

- Do you consider that the proposed program is sufficiently rigorous to be readily recognized by national and international institutions, and thus allow students to enter graduate school in areas related to this degree? Can you suggest some areas where this may be so?

*Answer.* This needs to be addressed to specific graduate programs at other universities and to other postgraduate schools. My guess is that graduates of the proposed program will be qualified to proceed to graduate school. The graduate programs in the Faculty of Health Sciences at SFU seem a likely avenue for further study for graduates of the proposed program. I believe that there will be many other possibilities.

- Do you consider that a graduate of this program would be well prepared for direct entry into the workforce? What qualities or aspects of the program support your point of view?

*Answer.* Based on the course profile for health professionals on page 14, graduates of the proposed B.Sc. will have a good base of knowledge and skills to offer employers. Readiness to enter the workforce depends to a significant extent on how well a person can present ideas orally and in writing. The breadth aspects of the list of courses are useful in this respect: ENGL 1100, PHIL 3010, and the choice of ANTH, PSYC, or SOCI in term 3. HSCI 4xxx Research Project can also greatly enhance the program. Executing a course of this kind well is a challenge.

- Using what you believe to be a “polytechnic university,” do you feel this degree reflects what a “polytechnic” could offer? How so?

*Answer.* I think of a polytechnic as focused on practical knowledge and skills. In recent times the line between polytechnics and traditional universities has become blurred. Universities have begun offering diplomas, certificates, and even degrees targeted at particular employment opportunities. Polytechnics have begun offering degrees quite similar to those of traditional universities. In the present case the proposed B.Sc. in Health Science seems perfectly consistent with KPU’s polytechnic character.

Before you launch a new program it is hard to know what the response will be. My expectation is that the proposed B.Sc. in Health Science will be popular.

In closing I should stress that I am not authorized to speak for SFU about new program proposals. Once the proposal is posted on PSIPS website an official SFU response will be generated and sent to the ministry.

Sincerely,  
Alistair Lachlan