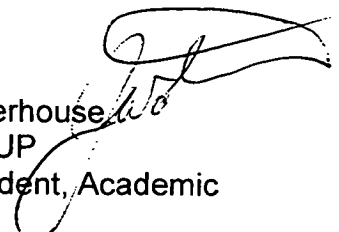


SIMON FRASER UNIVERSITY

S.06-114

Senate Committee on University Priorities Memorandum

TO: Senate

FROM: John Waterhouse 
Chair, SCUP
Vice President, Academic

RE: Proposal for a Bachelor of Science in
Health Sciences (Major, Honors, and
Minor in Health Sciences) (SCUP 06- 40)

DATE: September 22, 2006

At its September 13, 2006 meeting SCUP reviewed and approved the proposal from the Faculty of Health Sciences for a Bachelor of Science in Health Sciences (Major, Honors, and Minor in Health Science).

Motion

That Senate approve and recommend to the Board of Governors, the proposal for a Bachelor of Science in Health Sciences (Major, Honors, and Minor in Health Sciences) offered by the Faculty of Health Sciences.

encl.

c: D. MacLean
C. Janes
N. Hauerland



PROPOSAL

**Bachelor of Science Degree in Health Sciences
(Major, Honours, and Minor in Health Science)**

**Offered by
The Faculty of Health Sciences
Simon Fraser University**

September 13, 2006

EXECUTIVE SUMMARY

The last decade has seen a dramatic shift in approaches to managing the health of Canadians. While historically the main focus has been to improve medical care, emphasis is now placed increasingly on integrated approaches to promoting health, preventing disease and injuries, and establishing healthy environments.

Improving health across a population is contingent upon approaches that closely integrate the biological and social determinants of health into scientific research, health promotion and disease prevention strategies. In response to these needs, the Faculty of Health Sciences developed a Bachelors of Arts degree with a Major in Health Sciences that - while taking an integrated approach that builds on the social and natural sciences - is weighted more heavily towards the social science study of population health. The current proposal for a Bachelors of Science degree aims to create a complimentary program that is weighted towards the biological and molecular study of health science.

The Faculty aims to offer a distinct B.Sc. degree that does not duplicate but is complementary to degrees offered by other Departments at Simon Fraser University. At the same time, the two undergraduate programs offered by the Faculty of Health Sciences (B.Sc. and B.A), while relying on different disciplines of the Health Sciences, should have an overlapping focus on population and public health. By sharing parts of the curriculum, students from both degrees should benefit from the exposure to different sub-disciplines, and thus become trained in a truly interdisciplinary manner.

The B.Sc. degree in Health Sciences proposed here will first be offered in September 2007. It complements the B.A. degree in Health Sciences that commences in September 2006. It is anticipated that together these two undergraduate programs will accommodate substantial numbers of students and produce significant proportion of the graduates needed in our province and beyond. The degree aligns well with the strategic goals and priorities of SFU and the Faculty of Health Sciences. It is relevant to the learning goals of students, as reflected in student demand and interest. Finally, it meets societal needs for personnel in the broad area of population and public health.

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1 PROGRAM ORIGIN

1.1 IHRE

SFU's expertise in health is spread across many administrative units, including Kinesiology, Molecular Biology and Biochemistry, Psychology, and many other departments across the mathematical, social and applied sciences. SFU's drive to establish an academic unit clearly identified as "health" began over a decade ago, and came to fruition in 1999 with the establishment of the Institute for Health Research and Education (IHRE). The specific goals of IHRE were: (1) *"To foster health-related research at Simon Fraser University through the development of research collaborations and partnerships which bridge the biomedical, clinical and social science sectors incorporating multiple research perspectives"* and (2) *"To develop and offer innovative education programs in the broad area of health"* (<http://www.ihre.sfu.ca>).

Towards the first goal, IHRE brings together more than 130 researchers from all sectors of SFU with expertise and interest in health research. The goal is to foster cross-disciplinary research collaborations in the area of health. To facilitate cross-disciplinary interactions, IHRE support has substantially strengthened library holdings in the area of health. Moreover, personnel have been hired to support the infrastructure for health research across programs. Two technicians for instrumentation have provided services. Other personnel are in place to assist with grant applications. IHRE has funded proposals for program development, supported research projects, and coordinated some very successful fundraising activities. In order to facilitate the second goal (educational programming), IHRE proposed the development of a Faculty of Health Sciences (FHS) which would offer undergraduate and graduate degrees.

1.2 The Faculty of Health Sciences

In 2004, the Senate of Simon Fraser University created the Faculty of Health Sciences. The Senate documents emphasize the cross-disciplinary nature of this faculty: *"The new Faculty of Health Sciences will have a core complement of faculty chosen for their multi-disciplinary approach to health-related research and their ability to examine questions from varying methodological perspectives. Their expertise will provide a bridging function to existing research and teaching programs and will complement the specialized expertise of faculty in existing departments."*

In addition to the research mandate, the faculty has a clear teaching mission: *"A major goal of the new Faculty is to develop new undergraduate education programs"*. More specifically, the Senate document states: *"The new Faculty of Health Sciences will support research and develop teaching programs that bridge science, policy and practice across the five sectors at the foundation of IHRE"*, identified as (1) Basic Biomedical, (2) Clinical Interfaces, (3) Health Services and Systems, (4) Societies, Cultures and the Health of Populations, and (5) Technology and Health.

The initial focus was on graduate and undergraduate programs with a social science focus, leading to two graduate degrees (Master of Science degree in Population and Public Health, Masters of Global Health) and the Bachelors of Art in Health Sciences that commences in September 2006. Current initiatives in the Faculty are geared towards the natural science focus: in addition to the B.Sc. in Health Science described here, an M.Sc. program in Infectious Diseases is currently being developed, and future plans include an M.Sc. in Environmental Health Sciences and Toxicology.

2 CURRICULUM

2.1 Aims, goals, and objectives

In the current decade, it has become generally accepted that increased scientific knowledge alone will not produce dramatic increases in public health. Improving health across a population is clearly contingent upon approaches that closely integrate the basic biomedical sciences and the social and behavioural sciences. The Faculty of Health Sciences already offers a B.A. degree that is built on these premises, with emphasis on the social determinants of health, health promotion, and disease mitigation. The proposed B.Sc. in Health Sciences will complement this degree program, with an emphasis on the molecular and cellular determinants of health and disease, and a focus on human systems, populations, and evolution. It would integrate the basic and applied aspects of health research, both at the basic biomedical and social and behavioural level, and thus be complementary to degrees offered by the Faculties of Science and Applied Science.

2.2 Anticipated contribution to mandate and strategic plan of SFU

The proposed B.Sc. program will be the second undergraduate degree program offered by the Faculty of Health Sciences. Its relevance to the University's strategic plan is indisputable. SFU's 2004-2007 academic plan emphasizes the commitment to expand programming in the Faculty of Health Sciences. The Senate resolution establishing the new Faculty of Health Sciences mandates the development of undergraduate programs in health. Moreover, the planned construction of a Health Sciences Building, opening in 2008, provides evidence of the depth of this commitment.

2.3 Target audience

Students who are interested in careers that require detailed knowledge of the cellular, molecular, and behavioural mechanisms that underlay health and disease. Students who are considering post-graduate studies in applied health research, and professional health programs are also our target audience. The program will appeal to new secondary school graduates; college and university transfer students; and to students who might transfer from other SFU programs.

2.4 Content

In addition to a large number of basic science courses (Biology, Chemistry, Molecular Biology and Statistics), a group of health and disease courses form the core of the lower division curriculum. Building on this solid base of basic biomedical and applied health science, students will get advanced training in pharmacology, patho-physiology, and epidemiology, as well as molecular biology and genetics. A number of specialized advanced courses, both from Health Science and from other Departments, will allow the students to concentrate on either infectious disease/immunology, or environmental disease/toxicology. Throughout their studies, students will enroll in courses open to both B.A. and B.Sc. students, with the aim to better understand the interdisciplinary nature of Health Sciences. In their final year, a senior seminar will bring together B.A. and B.Sc. students in their chosen specialty, allowing intellectual cross-fertilization and integration of the curriculum.

The general requirements for graduation in the *Bachelor of Science – Major in Health Science* - program are the completion of 120 credit hours, including at least 45 in the upper division. The Faculty's WQB requirements must also be met. Due to the interdisciplinary nature of the degree, all students will be exposed to the foundation concepts in the social and the natural sciences. The detailed course requirements are listed in Tables 1 and 2, and the integration with the B.A. is illustrated in Figure 1 (p.8).

TABLE 1: DEGREE REQUIREMENTS B.Sc. (MAJOR IN HEALTH SCIENCE)

Lower division requirements:

All of:

1. BISC 101-4 General Biology I
2. BISC 102-4 General Biology II
3. BISC 202-3 Genetics
4. HSCI 130-3 Foundations of Health Science
5. STAT 201-3 Statistics for the Life Science or STAT 203-3 Intro. Statistics for the Social Sciences
6. CHEM 121-4 General Chemistry I w/lab
7. CHEM 122-2 General Chemistry II
8. CHEM 281-4 Organic Chemistry I w/lab
9. CHEM 282-2 Organic Chemistry II
10. MBB 221-3 Cellular Biology and Biochemistry
11. MBB 222-3 Biochemistry and Molecular Biology
12. HSCI 211-4 Perspectives on Cancer, Cardiovascular and Metabolic Diseases
13. HSCI 212-4 Perspectives on Immunology, Infectious and Parasitic Diseases
14. HSCI 214-4 Perspectives on Mental Health and Illness
15. HSCI 215-4 Perspectives on Disability and Injury

Total: 51 credit hours, including 19 HSCI credits, + Electives to meet WQB requirements

Recommended electives include: PSYC099, PHYS193, PHYS101+MATH 154, KIN105, KIN142

Upper division requirements:

Prerequisite

All of:

(23 credits, including 11 HSCI credits)

- | | |
|---|--------------------------|
| 1. HSCI 322-4 Introduction to Pathophysiology (w/lab) | MBB222, 3 200-level HSCI |
| 2. HSCI 323-3 Principles of Pharmacology and Toxicology | MBB221, 3 200-level HSCI |
| 3. HSCI 330-4 Exploratory Strategies in Epidemiology | |
| 4. MBB 331-3 Molecular Biology | MBB222 |
| 5. MBB 308-3 Molecular Biology and Biochemistry lab I | MBB222, MBB 312 (Co) |
| 6. HSCI/PHIL-xxx-3 Applied Ethics for the Health Sciences | 30 credit hours |
| 7. STAT 302-3 Analysis of Experimental and Observational Data | STAT 201 or 203 |

One of:

(7 credits: 4 HSCI credits + 3 BISC/HSCI credits prerequisite)

- | | | |
|--|-------------------------------|--------------------------|
| 8. HSCI 441-4 Virology Laboratory | + BISC 303-3 Microbiology | HSCI323, MBB308, BISC303 |
| 9. HSCI 442-4 Immunology Laboratory | + HSCI 325-3 Immun System I | HSCI325 |
| 10. HSCI 443-4 Environ. Health Tox. lab. | + BISC 313-3 Environ. Tox. II | HSCI313 |

One of:

(3 credits, including 3 HSCI credits)

- | | |
|---|-----------------------|
| 11. HSCI 482-3 Senior Seminar in Infectious Diseases | 2 courses from List B |
| 12. HSCI 483-3 Senior Seminar in Environmental Health Science | 2 courses from List C |

Electives:

A minimum of 3 additional upper division courses related to their major must be taken. These must include at least 6 HSCI credits, and 2 prerequisite courses for the chosen senior seminar course (from List B for HSCI 482, from List C for HSCI 483). HSCI 305 is recommended.

Total U/D: 45 credit hours, including 27 HSCI credits

Total B.Sc.: 93 credit hours of required and specified electives, including 46 HSCI credits (49 %), plus other electives, including courses to meet the WQB-requirements, for a total of 120 credit hours.

TABLE 2: LISTS OF PRE-REQUISITE CHOICES

(Depending on the courses chosen, additional pre-requisites may be required. Students will be advised to choose their electives accordingly, so that they can graduate with 120 credit hours)

List M:

Approved methods courses: HSCI 421-4 Health Survey Methods
SA 355-4 Quantitative Methods
SA 356-4 Qualitative Methods
SA357-4 Survey methods

List A: Prerequisite choices for HSCI 482-3: Senior Seminar in Social Health Science

HSCI 306-3 Principles of Health Economics
HSCI 401-3 Behaviour Modification in Health Promotion
HSCI 423-3 Health Policy in Disease Mitigation and Public Health
HSCI 430-3 Health Problems of Vulnerable Populations
SA 318-4 The Anthropology of Medicine
KIN 311-3 Applied Human Nutrition
KIN 340-3 Active Health – Behaviour and Promotion
GEOG 385-4 Geography, Health, and Health Care
HIST 409-4 Disease and Society

List B: Prerequisite choices for HSCI 482-3: Senior Seminar in Infectious Disease

HSCI 422-3 Diffusion pathways in the spread of disease
HSCI 425-3 The Immune System II; adaptive Immunity in Health and Disease
HSCI 431-3 The Global HIV/AIDS Epidemic
HSCI 432-3 Infectious Disease Epidemiology
BISC 441-3 Evolution of Health and Disease
BISC 471-3 Parasitology

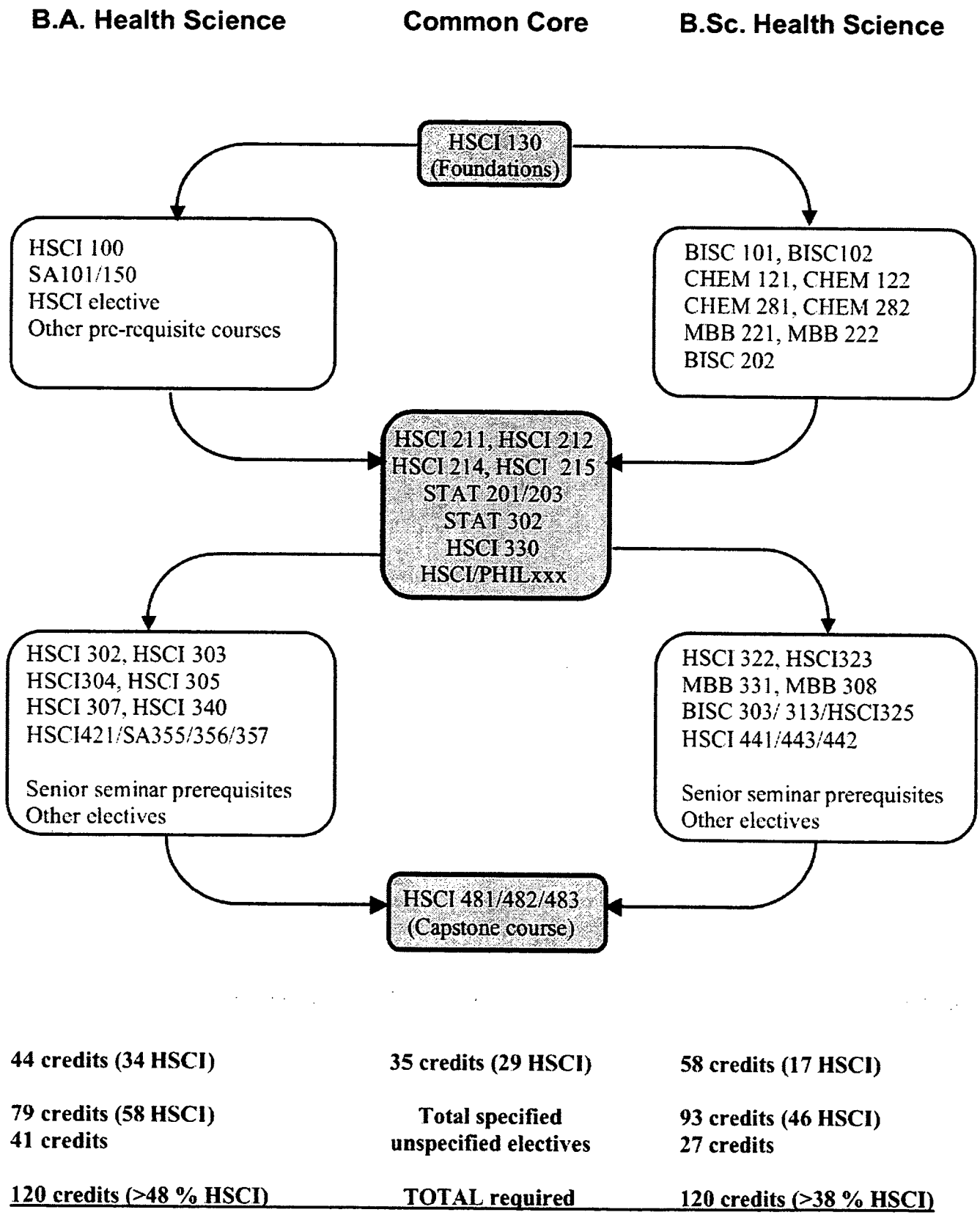
List C: Prerequisite choices for HSCI 483-3: Senior Seminar in Environmental Health

BISC 312 Environmental Toxicology I
BISC 432-3 Chemical Pesticides and the Environment
KIN 431-3 Environmental Carcinogenesis
REM 445-3 Environmental Risk Assessment
CHEM 371-3 Chemistry of the Aqueous Environment (Phys 102, Chem 360)
CHEM 372-3 Chemistry of the Atmospheric Environment (Phys 102, Chem 360)

For a *Bachelor of Science (Health Sciences Honours)* degree, both a CGPA of 3.0 and an upper division GPA of 3.0 is required. Honours students must complete at least 132 credit hours and meet all the requirements listed for Health Sciences majors. In addition, Honours students must complete an Honours thesis (HSCI 490, 491, 492), based on independent research under the direction of a faculty member. Honours students who obtain both a program and graduation GPA of 3.5 are eligible for the designation “first class”.

For a *Minor (Health Science)* degree students must complete HSCI 211, 212, 214, 215, and at least 15 upper division HSCI credits.

Figure 1: Integration of the BA and BSc programs



2.5 Learning methodologies

Instruction will be delivered through lecture and laboratories courses, as well as tutorials and seminars. Small upper division seminars, directed studies and individual research projects complement the formal course instruction. Particular emphasis is given to bring together students from different educational backgrounds, in order to foster cross-disciplinary understanding and cooperation.

Through shared first- and second year courses in various aspects of health and disease that complement the required science core, students will identify with their program from the beginning, and keep their focus on an integrative study of health and disease in human systems and populations. Towards that end, the highly interdisciplinary second year core courses will be team taught by experts from both the natural and social sciences.

The upper division specialization allows in-depth study of either infectious disease or environmental health science, allowing students to integrate previous courses into one highly important area of health science. Laboratory courses will provide the hands-on experience necessary for further biomedical studies, while interdisciplinary seminar courses will lead to an integrated understanding of the various aspects of population health. A Co-operative Education stream will be developed once the program is in place.

2.6 Degree completion time

Normal completion time is eight to ten semesters, depending on the course credit load taken each semester. Honours students can expect to add one additional semester. In the co-op option, the semesters of cooperative work are additional.

2.7 Admission requirements

For admission into the Faculty of Health Sciences, the same requirements apply as for general admission, plus Math 12 with at least 70 %. The mandatory lower division courses in Biology and Chemistry have additional admission requirements (Biology 12 and Chemistry 12, respectively); students who lack these are required to take first BISC 100 and CHEM 100.

2.8 Transfer of courses from other universities

We encourage the incorporation of relevant courses from other universities into the students' degree programs. Once our courses are approved, we will coordinate with the BC Council of Admission and Transfer (BCCAT) possible articulation agreements with other institutions from the BC college system. We expect that many of our courses will be unique and not directly articulated to courses offered in the colleges, therefore, we will consider block transfer options with selected institutions that offer relevant diploma programs.

3. NEED FOR AND DEMAND FOR THE PROGRAM

3.1 Distinctive Characteristics

We have chosen a degree structure that will give Simon Fraser University an advantage over degrees constrained by a medical school context, and those which for historical reasons are driven by their framing in the context of Kinesiology, Gerontology, Recreation, or Nursing. The proposed emphasis will complement the educational strengths of SFU in physiological systems and individual health (Kinesiology), in molecular and cellular biology (MBB and Biological Sciences), and in social and cultural aspects (Sociology and Anthropology, Geography, Gerontology, Psychology). The degree is unique in the extent to which biological, chemical, genetic, and molecular aspects are integrated with social science approaches to health and disease. It takes an interdisciplinary approach to the scientific and social determinants of health and disease, especially infectious and environmental diseases.

While there are several related undergraduate programs in Canada, most of the specific degrees offered are more narrowly focused than the B.Sc. degree proposed here. In addition to McMaster's highly successful (and selective) Bachelor of Health Science and other related programs offered in Eastern Canada (Community Health Sciences at Brock University, Health Science and Human Biology at the University of Toronto, BSc in Health Education at Dalhousie University, and degrees in the Faculty of Applied Health Sciences at the University of Waterloo) only one Bachelors of Health Science is offered in the West - at the University of Lethbridge. With a focus on nursing or addictions counseling, the Lethbridge degree addresses rather specific needs, unlike the more general degree proposed here.

3.2 Related programs in other British Columbia post-secondary institutions

At present, there is no program in British Columbia that integrates basic biomedical and social sciences in a comparable way. B.Sc. degrees in Immunology and in Toxicology are offered by the University of British Columbia, but these are solely focused on the molecular and cellular basics. The University of Northern British Columbia is currently developing Bachelor of Health Sciences Majors in Biomedical Studies, Aboriginal and Rural Health, and Environmental Health, which appear to share some of our goals. With a combined annual admission target of 25, however, these programs seem to be targeted to a relatively small, local audience.

3.3 Anticipated labour market demand

Graduates will have laboratory skills comparable to those from basic biomedical science programs, but also have strong interdisciplinary experience in social science settings. They exhibit employable skills such as group problem solving, medical statistical and computational skills, communication and organizational skills, honed within the practical framework of knowledge and concepts in molecular biology, immunology, toxicology, epidemiology, and public and population health.

Those desiring leadership roles or research positions in health will likely use the degree as a stepping-stone to further education. Goals might include research-based graduate programs at the master's and Ph.D. level in any area of the biomedical sciences, focused graduate programs such as the Masters in Environmental Toxicology or in Infectious Disease, professional development programs for teaching or higher education, or entry into Medical schools and other health professions.

4 FACULTY AND OTHER RESOURCES

4.1 Program implementation

The B.Sc. will admit first-year students from September 2007 onwards. It is planned to introduce the B.Sc.-specific second, third, and fourth-year courses in 2008/09, 2009/10, and 2010/11, respectively. The Faculty of Health Sciences, once the B.Sc. and B.A. degrees are fully established, is projected to have a total enrolment in Health Sciences courses of 800 FTEs. The following tables detail the specific delivery targets for these programs.

Table 4.1: FTE STUDENT MAJORS in HEALTH SCIENCES

<u>Year</u>	<u>BA</u>	<u>BSc</u>	<u>Total UG</u>	<u>Grads</u>
2005/06				30
2006/07	192		192	60
2007/08	354	115	469	90
2008/09	501	213	714	120
2009/10	640	300	940	150
2010/11	640	384	1,024	150
2011/12		steady state		

Table 4.2: COURSE FTE DELIVERED IN HEALTH SCIENCES

<u>Year</u>	<u>To HS Majors</u>	<u>Service to</u>		<u>Total</u>
		<u>Non-HS Majors</u>	<u>HS Grads</u>	
2005/06			30	30
2006/07	86	100	60	246
2007/08	199	100	90	389
2008/09	315	160	120	595
2009/10	440	160	150	750
2010/11	490	160	150	800
2011/12		steady-state		

Table 4.3: COURSE FTE DELIVERED TO HSCI MAJORS

<u>From other faculties</u>	
<u>Year</u>	<u>To HS Majors</u>
2005/06	0
2006/07	106
2007/08	270
2008/09	399
2009/10	500
2010/11	534
2011/12	steady state

4.2 Personnel

Number of faculty required, qualifications, new positions

Concomitant with the total enrolment increases, the faculty will fill a total of approximately 40 CFL positions, including several research chairs, the Dean and the Associate Deans. Normally, all faculty will teach in both graduate and undergraduate programs, with a workload following policy A30.03. The resulting student FTE to filled FTE CFL is expected to be similar to that in the Faculty of Applied Sciences: 21 (2003/04).

The Faculty has currently 16 faculty members, and searches for six additional faculty members have been successfully completed. All of these have expertise in the areas of the proposed undergraduate curricula, and will teach lower and upper division U/G HSCI courses, as well as graduate courses. Additional faculty with a strong science background will be needed to contribute to the team-teaching of the interdisciplinary second year core, as well as most of the more specialized upper division courses. As these courses will be phased in, hirings will be made to fulfill the teaching needs of the faculty. In the coming academic year, searches for up to seven faculty members will be carried out, in areas selected to serve the B.Sc. program as well as the proposed Master of Infectious Disease. Future searches will depend on the exact areas of specialty of these faculty members. Positions will be defined to assure expertise in all core areas of the faculty, especially the laboratory based graduate degrees and the B.Sc..

While the overall faculty complement will eventually be sufficient to teach the courses proposed here plus a substantial number of additional electives, other instructors may be needed in the initial phase of the program. These will be recruited from associate members (course buy-out from other departments), or experts from outside the university hired as sessional or limited-term instructors.

A list of current and future faculty members is appended (Appendix 2).

Teaching Assistants

The courses proposed here all have tutorial or laboratory sections that will be supported by teaching assistants (TA). For most courses, TA needs can be estimated by the TSSU agreement (e.g., tutorial size 18 students; one hr prep time etc.) but in special cases faculty members may also teach tutorial or laboratory sections. A budget sufficient to meet these needs will be allocated by the FHS.

Teaching support staff

Full-time positions for an undergraduate program coordinator (Ms. Linda Hegland) and an undergraduate secretary have been filled. They will be responsible for both, the B.Sc. and B.A. degrees.

4.3 Library

The Library has estimated the additional cost of the library resources for all additional HSCI courses required for the B.Sc. The faculty has committed the total onetime funds of \$13,000, and ongoing annual contributions of \$12,459, as required.

4.4 Space

The new Health Sciences building, announced in March 2005, will provide space to house the entire Faculty of Health Sciences. The building will contain the necessary office and lab space for faculty, teaching assistants, as well as undergraduate teaching and computer labs..

Prior to anticipated completion of the Health Sciences building in the Spring of 2008, temporary space has been allocated to FHS in the West Mall complex.

APPENDIX 1 – COURSE DESCRIPTIONS

HSCI 100-3 Human Biology

An examination of the biological processes that underlie human health and well-being, with emphasis on the evolutionary and ecological influences affecting human populations.

HSCI 110-3 Perceptions and misperceptions of common health risks

Factors influencing individual health risk perception, and the causes and consequences of misperception. An introduction to health risk assessment, management, and communication through the case-studies.

HSCI 120-3 Introduction to human sexuality and sexual behaviour

An evidence-based introduction to human sexual function and dysfunction. Normal psychosexual development in a range of sexual behaviours. The effects of culture on sexual attitudes, behaviour, and gender identity.

HSCI 130-3 Foundations of Health Science

How health, illness and disease are defined and measured for individuals and populations. Research strategies used to identify how health, illness and disease are distributed across human populations and how environmental, socio-economic, demographic, biological, behavioural and political factors influence individual and population health.

HSCI 140-3 Complementary and alternative medicine

A critical, science- and evidence-based examination on integrative, complementary, and alternative approaches to health and disease.

HSCI 150-3 Current topics in human sexuality

Current issues and controversies and their impact on the sexual behaviour and well-being of individuals at different ages and circumstances. Topics include sexually-transmitted diseases and AIDS, sexual orientation and cultural differences in tolerance, abuses of power, or sexually-explicit media.

HSCI 160-3 Global perspectives on health

An introduction to the differences in health and health services among the nations of the globe. Vulnerable sub-populations worldwide and their special health needs. Future worldwide health risks, their economic and health consequences.

HSCI 199-3 Special Topics in Health Studies

A specific topic in health sciences which is not otherwise covered in depth in regular courses.

HSCI 211-4 Perspectives on Cancer, Cardiovascular, and Metabolic Diseases

An interdisciplinary overview of the major non-communicable diseases – cancers, cardiovascular and metabolic diseases – from a public health perspective. Review of global distribution, risk factors, historical and cultural contexts.

HSCI 212-4 Perspectives on immunology, infectious and parasitic diseases

An integrated survey of infectious diseases and their social and economic causes and consequences. Infectious agents, including bacteria, protozoa, fungi and viruses – how they spread, how they work, and how they can be stopped. Surveillance, prevention, and management of infectious diseases and epidemics.

HSCI 214-4 Perspectives on Mental Health and Illness

An interdisciplinary overview of mental health and mental illness among populations. A review of the distribution and risk factors of mental illnesses as well as the historical and cultural context of their development.

HSCI 215-4 Perspectives on disability and injury

An interdisciplinary overview of injury and disability. Review of global distribution and risk factors. Examination of disability and injury across multiple levels of analysis.

HSCI 301-3 Foundations of health communication and health promotion

The role of health communication and education in the improvement of health and mitigation of disease. Strategies and methodology for public education regarding health maintenance, and preventative measures. New approaches in health promotion – legislation and the use of print media and web technology in health communication.

HSCI 302-3 Evidence-based decision making in health

Decision-making based on proven data. Effective criteria for rigorously evaluating health information and practices. Evaluation of health decisions influenced by political, commercial, or cultural factors.

HSCI 303-3 Perspectives on Behaviour Risks

An interdisciplinary overview from a public health perspective of behaviours and conditions associated with leading causes of morbidity and mortality.

HSCI 304-3 Perspectives on Environmental Health

Environmental risks and the impact of human activity on health. Chemical and biological hazards. Methodological approaches to their detection, assessment, management, and mitigation.

HSCI 305-3 The Canadian Health System

A comparative analysis of the Canadian health care and delivery systems. Organizational principles, health resources, access to care, service utilization, health care planning, and health promotion strategies. Societal and political issues that affect the Canadian health system.

HSCI 306-3 Principles of health economics

A study of micro- and macro-economic concepts used in the pursuit of better health and health care. Choices within limited resources, economic evaluation of efficiency, equity, elasticity of health systems, policy and regulatory issues.

HSCI 307-3 Research Methods in Health Science

Principles and applications in the contemporary research methodology in health sciences – strengths and weaknesses, successes and failures. Includes research methods associated with systematic health assessment and health planning.

HSCI 320-3 Health technology – Laboratory methods

An integrated study of contemporary laboratory and investigative methodologies in use in health assessment, indications, and misuse of chemical, immunological, microbiological, and molecular biological tests. Scientific and financial criteria for usefulness in screening for disease and risk factors.

HSCI 321-3 Health technology – Imaging

The investigative use of radiological and other medical imaging techniques, and their use and misuse. Descriptions, indications, and misuse of X-ray, CT, MRI, PET, ultrasonic, and newly emerging techniques. Scientific and economic criteria of usefulness in screening for disease and risk factors.

HSCI 322-4 Introduction to Pathophysiology

A review of pathophysiological mechanisms with an emphasis on the molecular, cellular and genetic bases of pathology. Laboratory includes histological preparations, and microscopic examination of normal and diseased tissues.

HSCI 323-3 Principles of Pharmacology and Toxicology

Biological, molecular and biochemical actions of drugs and toxicants. Genetic and environmental risk determinants. Understanding the broad spectrum of toxicological problems encountered in clinical practice, drug development and regulation, and medical research.

HSCI 324-3 Human Population Genetics and Evolution

Human variation and human health in the context of population genetics, epidemiology, demography, and human evolution.

HSCI 325-3 The Immune System I: Basis of Innate and Adaptive Immunity

The basic organization of the immune system, including structure, function and genetics of antibodies, T-cell receptors, innate immune receptors, and the complement system. Development of cells involved in both innate and adaptive immune responses.

HSCI 330-4 Exploratory strategies in epidemiology

The concepts and measurements of human population dynamics in epidemiological inference. Identification of causes and prevalence of disease. Demographic and molecular methodology to assess the determinants of health and disease.

HSCI 340-3 Determinants of Health

Fundamentals of social epidemiology. Social arrangements that affect human health and disease. Determinants of health disparities. Social inequities and health.

HSCI 399-3 Special topics in Health Sciences II

A specific topic in health sciences which is not otherwise covered in depth in regular courses.

HSCI 401-3 Behaviour modification in health promotion

Behaviour modification strategies and their applications in risk reduction, health promotion, and disease prevention. New approaches in behaviour modification – new media and new technology.

HSCI 420-4 Bioinformatics and health information systems

A broad study of computational tools for all aspects of the field of health. Topics include health information systems, databases, GIS, as well as the acquisition and management of molecular data in health risk assessment and mitigation.

HSCI 421-4 Health survey methods

The utility of surveys in health research and practice. Strategies for design, administration, and analysis of data from qualitative and quantitative health surveys. Practical tools for exploratory analysis. Problems and limitations, and how to avoid them.

HSCI 422-3 Diffusion pathways in the spread of disease

The dynamics of disease distribution processes, and the mechanisms and pathways by which diseases spread. Representation and analysis by computational and cartographic methods.

HSCI 423-3 Health policy in disease mitigation and public health

An overview of the tools of policy analysis as the means of shaping health care policy and the health of the public. The application of philosophical, political, and economic concepts to health policy debates and the improvement of health care delivery.

HSCI 424-4 Strategic applications of GIS in health

The use of mapping strategies and geographic information systems in identifying disease patterns and health risks. The relation of health problems to the distribution of markers of exposure, susceptibility, and health impact, and resulting risk management strategies for intervention, mitigation, and disease prevention.

HSCI 425-3 The Immune System II: Adaptive Immunology in Health and Disease

The immunologic response to bacterial, viral and parasitic infections, immunological diseases, such as autoimmune disease, immunodeficiency and transplantation-rejection reactions, immunotherapeutics and vaccine development.

HSCI 430-3 Health problems of vulnerable populations

A study of the relationships between socioeconomic conditions and health in vulnerable populations. Impact of living conditions and access to health services on health risks, mortality, and morbidity, and strategies for better outcomes in disadvantaged communities.

HSCI 431-3 The Global HIV/AIDS Epidemic

A multidisciplinary and international focus on the transmission, impact, prevention, and human aspects of the global HIV/AIDS epidemic.

HSCI 432-3 Infectious Disease Epidemiology

Tools for the surveillance, prevention, and control of infectious diseases and their application in public health programs.

HSCI 441-4 Virology Laboratory

Study, in a laboratory environment, of viruses as infectious agents that threaten human health and viral associated cancer as well as their use in gene therapy. Includes cell culture methods, virus isolation and quantification, virus purification, etc.

HSCI 442-4 Immunology Laboratory

Study, in a laboratory environment, of the molecular and cellular basis of the immune system. Immunology overlaps with many other biological disciplines including biochemistry, molecular biology, cell biology, genetics, physiology, microbiology and relies on laboratory methods and concepts derived from these disciplines.

HSCI 443-4 Environmental Health Toxicology Laboratory

The scientific principles underlying the toxic actions of various substances important to human health. The chemical nature of toxic substances, their mode of action, uptake and metabolism. Analytical techniques for analyzing samples of toxicological importance in the work and general environment and short-term assays used in risk assessment will be introduced.

HSCI 471-3 Special topics in health sciences I

Selected topics in areas not currently offered within the undergraduate course offerings.

HSCI 472-3 Special topics in health sciences II

Selected topics in areas not currently offered within the undergraduate course offerings.

HSCI 473-3 Special topics in health sciences III

Selected topics in areas not currently offered within the undergraduate course offerings.

HSCI 481-3 Senior Seminar in Social Health Science

An in-depth overview of the sociocultural, epidemiological, and policy aspects of population and public health.

HSCI 482-3 Senior Seminar in Infectious Diseases

An in-depth overview of newly emerging and re-emerging infectious diseases in the context of disease prevention, surveillance and control.

HSCI 483-3 Senior Seminar in Environmental Health

An in-depth overview of environmental health, environmental risks and human activity in relation to environmental health in the context of disease prevention, surveillance and control.

HSCI 488-3 Directed studies in health sciences

Independent studies on topics selected in consultation with the supervising instructor. A student will be permitted to enroll in this course only if she or he obtains the prior written agreement from the instructor.

HSCI 489-3 Directed research in health sciences

Independent research on topics selected in consultation with the supervising faculty member. A student will be permitted to enroll in this course only if she or he obtains the prior written agreement of a professor to act as research advisor.

HSCI 490-5 Research proposal

Research proposal for the Honours thesis. HSCI 490, 491, and 492 together form the Honours thesis. Limited to Honours students upon written agreement of the faculty supervisor.

HSCI 491-5 Independent Research

Research for the Honours thesis. HSCI 490, 491, and 492 together form the Honours thesis. Limited to Honours students upon written agreement of the faculty supervisor.

HSCI 492-5 Research thesis

Independent honours research thesis. HSCI 490, 491, and 492 together form the Honours thesis. Limited to Honours students upon written agreement of the faculty supervisor.

APPENDIX 2: FACULTY

Name	rank	area of expertise	start date
Michael Forlenza, Ph.D.	aP	molec. epidemiology, psychoneuroimmunology	2005
Marina Morrow, Ph.D.	aP	social determinants, mental health	2005
Rochelle Tucker, Sc. D.	aP	mental health, adolescent development	2005
Leilei Zeng, Ph.D.	aP	biostatistics	2005
Stephen Corber, M.D.	AP	epidemiology, public health practice	2005
Michael Hayes, Ph.D.	AP	social geography, population health	<2004
Michel Joffres, M.D. Ph.D.	AP	epidemiology, cardiovascular disease	2005
Julian Somers, Ph.D.	AP	mental health and addictions	2006
Timothy Takaro, M.D.	AP	environmental health science, exposure science	2005
Charlotte Waddell, M.D.	AP	children's health, mental health, health policy	2006
Arun Chocklingham, Ph.D.	P	global health, cardiovascular and respiratory diseases	2005
Kitty Corbett, Ph.D.	P	health communication., promotion, intervention	2005
Elliot Goldner, M.D.	P	mental health and addiction, health services/policy	2006
Craig Janes, Ph.D.	P	population/public health, anthropological health research	2005
Jamie Scott, M.D., Ph.D.	P	Immunology, Immunochemistry	2005
David MacLean, M.D.	P	Public health, epidemiology, cardiovascular disease	<2004
Ryan Allen, Ph.D.	aP	environmental health, air pollution	2006
Ed Mills, Ph.D.	aP	global health, infectious disease	2006
Bob Hogg, Ph.D.	P	infectious disease epidemiology	2006
Laury Goldsmith, Ph.D.	aP	comparative health	2006
Steve Morgan, Ph.D.	AP	health economics	2006
Lorraine Malcoe, Ph.D.	aP	social epidemiology	2006
Andrew Lawson, Ph.D.	P	biostatistics	

Current searches:

Merck Frosst endowed chair	biostatistics for arthritis and musculoskeletal diseases	2007
	virology	2007
	toxico-genomics	2007
(with MBB)	immunology	2007

Upcoming searches 2006-2008 (tentative)

A total of 10 additional positions have been committed to FHS (4 in 2006/2007, 6 in 2007/2008).

Areas covered by these searches include:

faculty lecturer	second year core courses
microbiology/immunology	also for the infectious disease graduate program
pathophysiology	also for the infectious disease graduate program
toxicology	also for environmental/occupational health graduate program
chronic disease pathogenomics	

Additional searches will depend on the exact areas of specialty of all FHS faculty members. Positions will be defined to assure expertise in all core areas of the faculty, including the B.Sc. and the laboratory-based graduate degrees.