KPU | KWANTLEN POLYTECHNIC UNIVERSITY

Bachelor of Science in Health Science (Honors, Major, Minor) Program Review Self-Study Report

Report Submission Date: September 24, 2025

Program Review Team Members:
Mika Mokkonen, Bassam Nyaeme, Jane Shin, Cayley Velazquez

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List of Acronyms

AGC: Applied Genomics Centre

AI: Artificial Intelligence

ALEX: Alexander College

ANTH: Anthropology

BC: British Columbia

BCCDC: BC Centre for Disease Control

BCGEU: BC General Employees' Union

BCIT: British Columbia Institute of Technology

BIOL: Biology

BSc: Bachelor of Science

CAMO: Camosun College

CAPU: Capilano University

CHEM: Chemistry

CLO: Course Learning Outcomes

CMTN: Coast Mountain College

COLU: Columbia College

COTR: College of the Rockies

DFW: Grade D, F, or W (Withdraw)

DOUG: Douglas College

ENGL: English

ENVI: Environmental Studies

FoS: Faculty of Science

FSO: Future Students' Office

FTE: Full Time Equivalent

GPA: Grade Point Average

HSCI: Health Science

INDG: Indigenous Studies

JIBC: Justice Institute of British Columbia

KPU: Kwantlen Polytechnic University

LANG: Langara College

MATH: Mathematics

MD: Medical Doctorate

OC: Okanagan College

OER: Open Educational Resources

PAC: Program Advisory Committee

PHIL: Philosophy

PHYS: Physics

PLO: Program Learning Outcomes

PSYC: Psychology

SELK: Selkirk College

SFU: Simon Fraser University

SOCI: Sociology

TRU: Thompson Rivers University

TWU: Trinity Western University

UBC: University of British Columbia

UFV: University of the Fraser Valley

UG: Undergraduate

UNBC: University of Northern British Columbia

UVIC: University of Victoria

VCC: Vancouver Community College

VIU: Vancouver Island University

Memo from Dean/Associate Dean

We would like to commend the Health Sciences (HSCI) department of the Faculty of Science for their thorough and insightful self-study. It provides a clear picture of the HSCI program's current state, its evolution and its alignment with KPU's polytechnic mandate as well as industry demands. The program's purpose is clearly articulated and outlines the opportunities for students in pursuit of continuing their educational journey as well as students wishing to enter the workforce upon graduation.

Their reflective and candid evaluation of current courses, curriculum and KPU services and resources highlights a strong commitment to maintaining high-quality education as well as thoughtful recommendations to support the future success of their students and graduates as well as supporting industry needs.

It has been clearly identified that the HSCI program is, and has been, experiencing significant growth in enrollment, and they have outlined a variety of opportunities with regards to offering specialized course options and degree pathways as a response to students, alumni and industry.

They have provided thorough and thoughtful recommendations to support curriculum development in numerous areas such as experiential learning, Indigenization content and perspectives, AI, and opportunities for breadth electives in the Health Sciences industry. These proposed recommendations may also aid in the continuation of growth in HSCI programs.
HSCI self-study has acknowledged some misalignments between program learning outcomes (PLO) and course-level content as well as some redundancy in program outcomes. Their suggested recommendation to review and revise the PLO's will lend itself well to focusing on the learning outcomes and needs of students for course progression.

We appreciate the importance the department has put on the need to strengthening industry connections to enhance the program reputation and student preparedness. The program's self-study demonstrates significant strengths and a clear commitment to continuous improvement. With further refinement and implementation of recommendations, the program is well positioned to continue growing in relevance and impact.

The recommendations are clear and actionable, and supported by the Faculty of Science, Dean's Office.

Respectfully submitted,

Amy Jeon
Dean *pro tem*

Christina Heinrick
Associate Dean *pro tem*

1. Introduction

1.1. Overview of the Program(s)

Program(s) Under Review

Program Name	Health Science
Program Level	Undergraduate
Credential	Bachelor of Science, Major in Health Science
Credits Required	124-128 credits
Discipline and specializations if applicable	n/a
Date established and last revision	September 2014 (established); April 2019 (Revision)

Program Name	Health Science
Program Level	Undergraduate
Credential	Bachelor of Science (Honours), Major in Health Science
Credits Required	126-130 credits
Discipline and specializations if applicable	n/a
Date established and last revision	September 2014 (established); April 2019 (Revision)

Program Name	Health Science
Program Level	Undergraduate
Credential	Minor in Health Science
Credits Required	26 credits
Discipline and specializations if applicable	n/a
Date established and last revision	September 2022 (established); not yet revised.

To critically examine the Health Science program at KPU, a clear and universal understanding of the discipline is needed. Faculty within the program describe health science as focusing on the science of human health, where skills based in the biomedical and sociomedical sciences are needed. As such, we define health science as *a broad field that encompasses the study and application of knowledge related to health, wellness, disease prevention, and healthcare. Health science integrates various disciplines and*

diverse approaches to understand the factors influencing human health and the delivery of healthcare services. Health science includes both basic and applied research, as well as the development of strategies and interventions to promote, improve, and/or maintain health.

The Health Science program at KPU is offered as a four-year degree, with either a Bachelor of Science, Major in Health Science option or a Bachelor of Science (Honours), Major in Health Science option. The program also offers a Minor in Health Science degree that is available to students pursuing a bachelor's degree at KPU in a field other than health science. The program is administered by the FoS and equips students for jobs in industry, government, community, or academia, as well as further study in allied health (e.g., occupational therapy, physiotherapy, speech pathology), health professional (e.g., medicine, dentistry, pharmacy, nursing), or graduate programs (e.g., public health, health administration, basic or applied science), as desired. Central to this program is a focus on obtaining relevant job skills, partaking in hands-on learning, and building connections to local community organizations. Completion of the major or Honours degree requires students to complete between 124-128 or 126-130 credits of university coursework, respectively.

As a discipline and as a post-secondary offering, health science is relatively new. For example, the University of Northern British Columbia's program began in the mid 1990's and Simon Fraser University's program began in 2005. In 2008, KPU became a degree granting institution and subsequently pursued a BSc in Health Science program. The program proposal received Senate approval in August 2010 and BC Ministry of Post-Secondary Education and Future Skills approval in September 2010. The program was designed to support KPU's strategic objective of developing new baccalaureate science degrees and increasing student FTEs. Furthermore, the program was intended to be consistent with KPU'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.

The Health Science program was built upon KPU's core strengths in science, community and health studies, business, and humanities, by incorporating existing courses offered by these faculties and departments. The program was developed in consultation with relevant post-secondary, regulatory, professional, and industry experts (e.g., Fraser Health, UBC Medicine) and designed to increase post-secondary science enrolment in health science education, particularly in the region that KPU serves (Langley, Surrey, Delta, and Richmond). A broad-based degree program with an emphasis on practical skills and undergraduate research opportunities with community and industry affiliations was designed. The first health science courses were taught in January 2014 and the first student graduated in 2018. The program has been on a mostly upward trajectory and sustained pattern of growth since its inception.

Admission Requirements and Laddering

Admission to the Health Science program is open-intake which means there is no yearly limit to the number of students admitted. The FoS admission requirements apply to the program, where new students choose Health Science Intended (undeclared). To complete all first-year courses, students should meet the following prerequisites: English 12 (C+) or equivalent, Chemistry 12 (C+) or equivalent, Pre-calculus 12 (C+) or equivalent, and Physics 12 (P). Biology 11 and 12 are recommended but not required. Students missing any of the above prerequisites upon graduation from high school can upgrade at KPU via the respective qualifying course(s).

Students should declare into the Health Science program by the time they complete 60 credits of undergraduate coursework. At declaration, the student must satisfy all of the following requirements:

- In good academic standing with the University
- Completion of a minimum of 21 credits of undergraduate course work, including the following:

- 3 credits of ENGL at the 1100 level or higher
- BIOL 1110 (minimum grade "C")
- HSCI 1115 (minimum grade "C").

Students with post-secondary experience (e.g., from another post-secondary institution) can declare directly into the Health Science program if all of the declaration requirements (above) are met.

Credential and Curricular Requirements

The curricular requirements for a BSc degree at KPU include:

- In addition to ENGL 1100, complete 3 credits from courses designated as Writing Intensive
- 120 credits from courses at the 1100 level or higher.
- 45 credits from courses at the 3000 level or higher, including 9 credits at 4000 level.
- 18 credits of breadth electives including at least 3 credits from a course at the 3000 level or higher:
  - at least 12 credits from courses that are offered outside the Faculty of Science; and
  - up to 6 credits from courses offered within the Faculty of Science other than BIOL, CHEM, MATH, and PHYS
- Cumulative GPA of 2.0 or higher
- At least 50% of all courses for the BSc, and at least 66% of upper-level courses for the BSc, must be completed at KPU.

Bachelor of Science, Major in Health Science

Required courses for the BSc Major in Health Science include:

Year 1: BIOL 1110, 1210; CHEM 1110, 1210; ENGL 1100; HSCI 1115, 2220; MATH 1120 or 1130, 1230; one of (INDG 1100, MATH 1135, PHIL 1145, 1155, or SOCI 1125)

Year 2: BIOL 2320, 2321, 2421; CHEM 2320, 2420; PHYS 1101; SOCI 2280; elective at 1100 level or higher; one of (ANTH 1100, ENVI 2305; PYSC 1100, PHYS 1102, PHIL 1145).

Year 3: BIOL 2330, 3130, 3180, 3321, 4230; STAT 2335; PHIL 3010; two of (BIOL 3320, HSCI 3110, 3215, 3225, or 4130).

Year 4: BIOL 3421, 4130; HSCI 4380; two of (BIOL 3330, 4320, 4245, 4255, HSCI 4170); two of (HSCI 4110, 4140, 4245, 4250); HSCI 4950 and an elective at the 3000 level or higher OR HSCI 4199 and HSCI 4299.

(https://calendar.kpu.ca/programs-az/science/health-science/health-science-bs/#requirementstext)

Bachelor of Science (Honours), Major in Health Science

Required courses for the BSc Major (Honours) in Health Science include:

Year 1: BIOL 1110, 1210; CHEM 1110, 1210; ENGL 1100; HSCI 1115, 2220; MATH 1120 or 1130, 1230; one of (INDG 1100, MATH 1135, PHIL 1145, 1155, or SOCI 1125)

Year 2: BIOL 2320, 2321, 2421; CHEM 2320, 2420; PHYS 1101; SOCI 2280; elective at 1100 level of higher; one of (ANTH 1100, ENVI 2305; PYSC 1100, PHYS 1102, PHIL 1145.

Year 3: BIOL 2330, 3130, 3180, 3321, 4230; STAT 2335; PHIL 3010; two of (BIOL 3320, HSCI 3110, 3215, 3225, or 4130).

Year 4: BIOL 3421, 4130; HSCI 4380, 4990, 4995; two of (BIOL 3330, 4320, 4245, 4255, HSCI 4170); two of (HSCI 4110, 4140, 4245, 4250)

(https://calendar.kpu.ca/programs-az/science/health-science/health-science-bsh/#requirementstext)

Minor in Health Science

Students pursuing a Minor in Health Science must be admitted to KPU for undergraduate studies. Students pursuing this minor must declare this option prior to graduation. A minor may only be declared as part of a baccalaureate degree unrelated to health science. The Minor in Health Science requires completion of 26 credits as specified by completing the following set of core courses: BIOL 1110, BIOL 1210, HSCI 1115 and a minimum of 15 credits from courses in HSCI at the 3000 level or higher, including: a minimum of 6 credits in courses at the 4000 level or higher.

(https://calendar.kpu.ca/programs-az/science/health-science/health-science-minor/#requirementstext)

Transferability

Many of the first- and second-year courses that are offered within the Health Science program have existing course articulation agreements with various post-secondary institutions in BC (see Table 1 for courses that transfer directly to KPU under the BC Transfer Guide).

Table 1. Transferability of first- and second-year required Health Science program courses from various post-secondary institutions across BC to KPU.

	ALEX	BCIT	CAMO	CAPU	CMTN	COLU	COTR	DOUG	LANG	OC	SELK	SFU	TRU	TWU	UBCV	UFV	UNBC	UVIC	VCC	VIU
BIOL 1110	√			√	√	√	√	√	√	√	√	√	√	√		√		√	√	
BIOL 1210	√			√	√	√	√		√		√	√	√	√		√		√	√	
CHEM 1110	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
CHEM 1210	√		√			√	√		√	√	√	√	√	√	√	√	√		√	
ENGL 1100	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√			√	√
HSCI 1115	√		√	√		√			√			√					√			
*MATH 1120	√		√	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√
MATH 1230						√		√	√				√			√				
PHYS 1101	√	√	√		√			√	√	√	√	√	√			√	√			√
BIOL 2320			√				√	√	√		√			√		√				√
BIOL 2321	√			√	√		√	√	√		√		√	√		√		√		√
BIOL 2330			√	√			√	√					√	√						
BIOL 2421	√			√	√	√			√	√	√		√			√				
CHEM 2320	√	√		√	√	√	√	√	√	√	√		√	√		√			√	√
CHEM 2420	√	√		√	√	√	√	√	√	√	√		√	√		√			√	√
HSCI 2220																				
STAT 2335			√							√		√						√		√
SOCI 2280	√				√			√								√				

*Includes MATH 1120 or MATH 1130 (as either are acceptable within the Health Science program).

1.2. Program Department

The Department of Biological and Health Sciences currently offers courses at KPU's Langley, Richmond and Surrey campuses. With the exception of two courses (i.e., HSCI 2220 Medical Terminology and SOCI 2280 Sociology of Health, Disability, and Society), students attending the Richmond campus can complete all courses required for the first two years of the program. The full degree, including all HSCI courses at the third- and fourth-year levels, is run at KPU's Surrey campus. The Surrey campus also has dedicated research spaces such as the Applied Genomics Centre (AGC), an applied research lab focused on developing molecular genetic (genomic) and cellular product (metabolomic) solutions for the agricultural and human health sectors. As of March 1, 2025, the Department of Biological and Health Sciences included both regular (20.79 FTE) and contract (0.58 FTE) faculty, along with regular (20 FTE) and contract (3.2 FTE) BCGEU staff (e.g., lab technicians, lab instructors). There is also a lab supervisor that supports the laboratory instructors and technicians (under the guidance of the FoS Dean's office) and a research coordinator for the AGC laboratory.

1.3. Program Purpose

The purpose of the Health Science program is to provide graduates with: 1) foundational knowledge in the basic sciences; 2) skills to apply scientific knowledge to clinical, public, and population health issues; and 3) educational prerequisites for entry into allied health, health professional, or graduate programs. In addition, the Health Science program is intended to align with the BC Ministry of Post-Secondary Education and Future Skills seven essential skills needed for work, learning, and life that include: writing clearly and concisely, speaking effectively, reading and comprehending material, working effectively with others, analyzing and thinking critically, resolving issues or other problems, and learning on your own. The program is designed around core courses such as anatomy, physiology, biochemistry, genetics, and microbiology that are complemented with electives in areas such as bioinformatics, nutrition, health policy, health care ethics, health and aging, and health business. Students in either the major or Honours degree option have the opportunity to participate in a year-long applied health research project under a faculty supervisor. The program is designed to provide students with the necessary skills to pursue a career aimed at promoting health among local, regional, national, and international communities.

Changes Since Program Launch

Since its launch in 2014, the Health Science program has continued to adapt to meet the needs of its students, along with relevant industry and community partners, primarily via curricular changes. For instance, the Honours degree option was approved in 2017. Some initial courses (e.g., HSCI 3205 Health Law, HSCI 4135 Herbal Medicines and Natural Health Products) were never developed, and others had name changes to better reflect the course content (e.g., HSCI 3XXX Science Language was changed to HSCI 2220 Medical Terminology, HSCI 4XXX Gerontology was changed to HSCI 4140 Health and Aging). The initial degree also included HSCI 4XXX Research Methodology, however, in order to prepare students for senior research project options, the course was changed to third-year level. It was also decided that health science students would take BIOL 3180 Life Science Research Methods in place of a designated HSCI-coded option to better support course offerings (e.g., BIOL 3180 was structured to be broad enough to serve both programs). These changes did not significantly alter the degree program, but instead enabled students to graduate in a timelier manner and allowed the program to remain more viable in its infancy.

The first Health Science program review (2019-2024) provided a baseline assessment of how the program was functioning and how well received it was by students, alumni, faculty, and discipline / sector partners. The review elicited important feedback and triggered multiple changes, most of which were curricular.

Some of the primary changes that resulted from the previous program review are outlined below:

Identified Issue	Program Change
After many of the upper year HSCI courses were initially offered, it was realized that prerequisites should be changed to provide more flexibility to students, especially given that many of these courses are stand-alone and terminal options within the program.	Pre-requisite changes were made for the following courses: HSCI 3110, 3215, 3225, 4110, 4140, 4245, 4380. For several of these, the requirements were made more flexible, requiring only the completion of HSCI 1115 and a certain number of credits (e.g., 60, 75, 90).
Developing research projects and courses that meet student needs was highlighted as an important strategy to expand applied learning opportunities. Health science students who wished to carry out a research project but did not meet the HSCI Honours program requirements had to receive a program override to enroll in BIOL 4199 Research Project I and BIOL 4299 Research Project II (non-Honours research).	HSCI coded non-Honours research courses for the existing Bachelor of Science, Major in Health Science degree program were created. Students taking this option complete HSCI 4199 Research Project I and HSCI 4299 Research Project II if they want to engage in research but do not meet the GPA requirement for an Honours degree.
As a polytechnic university, we continually strive to offer students a unique advantage in the workplace upon graduation by gaining experiential learning while in our program. We found that our students were not receiving enough hands-on training, nor were they fully aware of the career paths available to them with a health science degree. The original degree program proposed the inclusion of a co-operative education option but it had yet to be formalized.	A co-operative education degree option for both major and Honours students within HSCI was established. Consultations regarding co-op were initiated in Fall 2021. The program was approved in Spring 2023 and officially implemented in Fall 2023.
There are students across KPU completing other degrees who have an interest in health (e.g., business students wanting to work in health administration). Without a minor degree option, we were not able to offer a 'value-add' and subsequently, missed out on attracting additional students to our courses.	The Minor in Health Science degree option was developed for KPU students taking other baccalaureate degree programs. The minor was approved in Spring 2022 and officially implemented in Fall 2022.
Particularly in its infancy, the Health Science program frequently had lower student enrolment in 3rd and 4th year courses as compared with 1st and 2nd year courses.	Most upper year HSCI elective courses within the degree are now offered in alternate years. Allowing both 3rd and 4th year students to take courses at the same time has meant that enrolment is healthier and there is a reduced likelihood of courses having to be canceled.

1.4. Issues for Program Review

This is the second program review for both the BSc, Major in Health Science and the BSc (Honours), Major in Health Science degrees (and the first for the Minor in Health Science). The broad goals for the last program review included: (1) increasing student recruitment, retention, and satisfaction; (2) expanding applied and experiential learning opportunities within the degree; and (3) enhancing the individual Health Science program profile and identity within and outside KPU.
The current review will build on these goals and ideally address new issues that have been identified by students, alumni, faculty, and discipline / sector representatives since the previous review was completed. A thorough assessment of curriculum and learning outcomes will also be performed. Findings from the review will be used to highlight program strengths and outline recommendations to reinforce its relevance and support its continued growth.

Some of the program-specific issues that we hope to focus on include the following:

1. ***Determine whether, and if so how, to adjust the program to meet student needs.*** The Health Science program was originally designed to serve as a foundational pathway for students intending to pursue a health professional program (e.g., medicine). To date, relatively few program graduates have followed that trajectory, however, there is an increased number of students from KPU applying of late. It is therefore necessary to examine whether the program meets the needs and interests of our current student population and whether the curriculum supports diverse career outcomes both within and beyond graduate education. The following steps may be pursued:

    A. Clarify career pathways beyond health professional programs
    B. Strengthen core skill development across the program
    C. Explore the development of alternative credential options
    D. Examine trends in 3rd and 4th year enrolment

2. ***Align course learning outcomes with program-wide curricular goals and learning outcomes.*** The Health Science program has not yet undergone a full curriculum mapping process to systematically align Course Learning Outcomes (CLOs) with Program Learning Outcomes (PLOs). As a result, there are likely redundancies, misalignments, and gaps in content delivery and skill development across the curriculum. This review presents an opportunity to establish clear, structured progression from introductory to advanced learning while streamlining and strengthening the overall learning experience. The following steps may be pursued:

    A. Undertake a formal curriculum mapping process
    B. Refine and possibly reduce program learning outcomes
    C. Enhance course design and alignment
    D. Improve transparency and student understanding of learning outcomes
    E. Build faculty capacity for outcome-based design

3. ***Fulfill the polytechnic mandate for hands-on and experiential learning.*** As Canada's only polytechnic university, KPU offers a unique, student-centred learning environment that focuses on hands-on skills alongside traditional academics. The Health Science program made significant advances in these areas after the most recent program review recommendations. However, several valuable experiential elements are only found in elective courses or optional components of the program rather than being consistently embedded across the degree. The following steps may be pursued:

    A. Inventory existing experiential learning opportunities
    B. Develop and integrate additional applied experiences

C. Strengthen and scale existing experiential courses
D. Improve access and equity in experiential learning
E. Leverage the co-operative education option

4. ***Sequence, quantity, and content of HSCI courses available within the degree program.*** The Health Science degree program is heavily focused on basic science education where students complete a significant number of courses within this area (e.g., biology, chemistry, physics). Currently, students take between 13 and 15 biology-coded courses (6 lower-year and 7 to 9 upper-year), yet take significantly fewer health science-coded courses (2 lower-year and 5 to 7 upper-year) across the degree. As faculty have noted in the past, the current degree is more reflective of a biology degree with a minor in health science, as opposed to the other way around. There is also a significant gap in health science programming where students do not take any health science-coded courses in the second year of the program (and potentially only one in third year). Content within the program could also be expanded to focus more significantly on the broad array of factors (e.g., individual, social, economic, and environmental) impacting human health. Anecdotally, we have heard of students losing interest in the degree due in part to the minimal health content provided early in the program. The following steps may be pursued:

    A. Analyze course distribution and credit allocation
    B. Strengthen the identity of the Health Science degree program
    C. Introduce or advance HSCI content earlier in the program
    D. Ensure program cohesion and curriculum progression
    E. Improve retention and student engagement through health-relevant content

5. ***Connection between the program and the sector.*** The BSc in Health Science degree currently includes limited formal mechanisms for students to engage with the health sector across the duration of the program. While experiential opportunities are available in select courses such as HSCI 3110 and HSCI 4110, as well as through the optional co-operative education stream, these are not integrated consistently across the program. As a result, many students complete the degree with insufficient exposure to potential career pathways, limited interaction with industry or community partners, and variable levels of career preparation. Increased and more structured engagement with the health sector is aligned with KPU's polytechnic mandate and would support program-level goals related to applied learning and workforce readiness. Sector engagement also provides students with relevant context for academic learning, facilitates the development of professional competencies, and enhances program reputation and relevance. To address this gap, developing a formalized co-curricular or embedded career development initiative should be given consideration. The purpose of such a program would be to provide a structured, scalable framework through which students can build sector knowledge, develop applied skills, and access professional networks throughout the duration of their degree.

2. Curriculum Review

2.1. Pathways for Graduates

With an aging population, the BC provincial government has predicted that future employment will increase at an average annual rate of approximately 1.4% (WorkBC, 2024). Just under two-thirds of the expected job openings between 2024-2034 (1,120,000 jobs in total) are forecasted to be based on replacement demand and the remaining openings based on economic growth. In terms of labour supply, 47% of job seekers are expected to be new entrants (e.g., young people aged 29 or younger), 46% will be new immigrants, and the remainder being those changing occupations, coming to BC from other parts of Canada, or entering the labour force after a period of absence. According to analysts, the largest job categories in the province include health care and social assistance (178,100 job openings; 16% of the total), as well as professional, scientific, and technical services (150,300 job openings, 13% of total). The highest demand health professions include general practitioners and family physicians, nurses, pharmacists, dentists, physiotherapists, occupational therapists, medical laboratory technologists and assistants, and health care aids. Other high demand professions related to health include administrators, managers, researchers, consultants, and community workers (WorkBC, 2024).

In addition to the BC labour market dynamics, trends in the health sector impact the Health Science program. Historically, health education activities have been carried out by public health nurses and nutritionists. In recent years, these roles have been reorganized by regional health authorities into positions specific to health education (e.g., reducing substance use, improving food security, promoting physical activity). Examples of health education positions within BC include community health specialists, school health promotion specialists, and prevention specialists. Secondly, there continues to be numerous non-clinical roles (e.g., education coordinator, quality assurance specialist, project manager, policy analyst) within the regional health authorities that are ideally filled by individuals with knowledge of health and healthcare. These trends are creating a need for a labour pool that has specialized skills and knowledge in health education, health administration, and health policy. Analysts suggest that these trends are being driven by efforts to improve health outcomes and reduce healthcare costs by educating people about healthy behaviours and the correct utilization of available healthcare services.

It is important for KPU's Health Science program to be competitive in the labour market. In doing so, the curriculum will need to align with the evolving healthcare sector, in particular as it relates to several on-going trends being experienced in Canada:

- Changing demographics (e.g., aging population, influx of new immigrants)
- Increasing incidence and prevalence of chronic health conditions (e.g., diabetes)
- Greater pressure to effectively use financial and human resources
- Rapid advancement of health-related technologies (e.g., robotics, nanotechnology, telehealth)
- Stronger need to focus on primary prevention efforts at the population level

To maintain relevancy of the curriculum and support various pathways for graduates, consideration of these trends needs to be made in the design and delivery of the Health Science program content.

Based on the above, the following are logical career paths (or groupings) for health science students: (1) clinical and allied health, (2) research and academia, (3) population and public health, (4) health administration and management, and (5) biotechnology and pharmaceuticals. With the exception of clinical and allied health careers which require additional education and training after KPU, it should be

possible for graduates to obtain employment in these other groupings right away. Therefore, the program needs to consider whether graduates are able to move directly into entry-level jobs in these areas.

Pathways to Employment

The Health Science degree was designed as purposefully broad to enable graduates to obtain positions in a wide range of occupations upon graduation, including those within both the public and private sector.

Example career pathways that students can pursue include:

- Research and academia (e.g., research coordinator, wellness specialist)
- Population and public health (e.g., biostatistician, health educator, global health worker)
- Health Administration and management (e.g., program coordinator, health policy analyst)
- Biotechnology and pharmaceuticals (e.g., bioinformatician, pharmaceutical representative)

Graduates will typically find employment in entry-level positions, often within a health authority (e.g., Fraser Health, Vancouver Coastal, Provincial Health Services Authority), academic institution, or other community-based or industry organization. For example, a recent graduate is now employed as a Coordinator, Quality Improvement within Fraser Health. Another recent graduate is working as a Territory Manager for Tribe Medical Group Inc (medical device sales), and others are working as full-time employees in the Applied Genomics Center (e.g., Lab Technician, Bioinformatician) at KPU.

One of the primary goals when designing the program was to provide the educational prerequisites for entry into allied health, health professional, or graduate programs (see below). Now that we have had many graduates come through the program, we have a much stronger sense of what students desire after their time at KPU. As a demographic that tends to work while going to school (and frequently takes more than four years to graduate), we see that many students wish to find entry-level employment immediately after graduation (even when they desire to pursue graduate study in the future). As such, job preparation within the degree needs to be substantial, with on-going conversations and consultations with the PAC to determine industry needs and desired skill sets. Students should leave our degree program equally prepared to immediately enter the workforce or continue with further educational opportunities.

Health science students wishing to move into non-clinical roles need to be prepared to enter these positions immediately upon graduation. Consequently, there is significant room within the program to better align course content with the necessary knowledge and skills required for entry-level positions within an evolving healthcare industry. While our students develop strong technical skills (e.g., laboratory techniques), most will be working in complex environments that interface with the general public. Strengthening evidence-based decision-making skills, along with communication, interpersonal, and leadership skills will all be important. For example, a focus on developing leadership skills through courses with content in project management or health communication will ideally enable students to be successful in administrative roles within the regional health authorities. Thus, developing a more thoughtful organization and collection of courses within the program that work together to provide both hard and soft skills will be important.

Pathways to Further Study

Many of our graduates aim to move into an allied health, health professional, or graduate program after their time at KPU. However, most of these programs are currently located outside the region that KPU serves (Langley, Surrey, Delta, and Richmond). As one of only two institutions offering a BSc in Health Science degree option within the lower mainland (the other institution is SFU), KPU enables students to

pursue their undergraduate education close to home (Langley, Surrey, Delta, and Richmond) before having to pursue further education in other parts of Metro Vancouver or beyond.

Examples of post-graduate education paths that students can pursue include:

- Allied health programs such as occupational therapy, physiotherapy, speech pathology
- Professional health programs such as medicine, dentistry, pharmacy, nursing
- Graduate programs such as public health, health administration, basic or applied science

To date, most students have opted not to pursue a professional health program upon graduation, however, one recent graduate pursued Pharmacy at UBC and another pursued Medicine at Xavier University in Aruba. KPU has an articulation agreement with St. George's University in the Caribbean where students can work toward a medical degree after graduating with a BSc in Health Science. (Note - to date, two students have pursued this pathway, both enrolling for September 2025). More commonly, students wishing to engage in direct patient care will seek out nursing or other allied health programs. Graduates of the Health Science program have enrolled in further education, including: nursing (KPU, BCIT), recreational therapy (Douglas College), respiratory therapy (Thompson Rivers University), physiotherapy (Western University), and counselling (CityU, Yorkville). Other former students have chosen to pursue graduate work at the University of British Columbia (e.g., MSc in Medical Genetics) and Thompson Rivers University (e.g., MSc in Environmental Science). One graduate is currently completing a Master of Public Health program in the United Kingdom at the University of Keele, and another recently completed the Master of Public Health (Social Policy) program at the University of Victoria.

The structure of the current degree clearly supports entry into a variety of allied health, health professional, and/or graduate education programs which is positive. (NOTE: some students have had to complete additional prerequisites beyond their health science degree to be eligible for certain programs). However, one area that the initial program proposal anticipated students moving into that has yet to be popular among graduates is teaching. We anticipated graduates of the program being well prepared for entry into teaching preparation programs for secondary school health and/or science. To our knowledge, none of the Health Science graduates have pursued this route to date. It would be beneficial for the program to connect with teacher preparation programs offered locally to determine how best to promote these opportunities to students.

Pathways to an Enriched Civic and Personal Life

KPU's Health Science program enriches students' civic and personal lives by equipping them with the necessary knowledge and skills to positively impact their communities. Through an interdisciplinary curriculum, students develop a foundation in the basic sciences that is supplemented with knowledge of health-related topics and issues. Students learn to think critically, communicate effectively, and approach challenges with socio-cultural awareness. Graduates leave the program informed of real-world health issues that are relevant to their personal lives and society more generally. Whether by volunteering for health-related initiatives or participating in research in the field, graduates of the program are prepared to create change within their communities and beyond.

Career Pathways Map

The Health Science program affords students the opportunity to pursue many different career paths (Appendix A). In addition to direct employment options, Appendix A outlines examples of various allied health and health professional programs that graduates may ladder into upon graduation. There are also a variety of graduate degree programs in health, science, business, management, and/or education that health science students can pursue after completing their degree (not shown).

2.2 Skill Development

The Ministry of Post-Secondary Education and Future Skills has a list of seven essential skills that KPU's degree programs are expected to meet. A number of these skills are inherent to an undergraduate health science degree, with development in these areas increasing across each year of the program.

Writing Clearly and Concisely

Academic, scientific, and professional writing are developed in dedicated courses, as well as throughout the program with course assignments like essays, journals, and reports using instructor evaluation, peer review feedback, and library supports.

Example Courses

ENGL 1100 Introduction to University Writing - Through selected readings and a variety of media, students explore, assess, and respond to arguments and issues from across disciplines and relevant to contemporary cultures with introduction to research methods, including finding, evaluating, integrating, and documenting sources.

BIOL 3180 Life Science Research Methods - Students learn how to critically evaluate research literature, develop a research proposal and present research findings. They also develop their writing abilities through practice, revision and assessment from peers and the instructor, in this 'writing-intensive' attribute course.

Speaking Effectively

By incorporating learning activities like presentations, interviews, group discussions, critiques, and questions & answers throughout the courses in the program, students' confidence and effectiveness in verbal communication are developed with opportunities for informal and formal public speaking.

Example Courses

HSCI 1115 Introduction to Health Science - Students are introduced to the multifaceted field of health science and the foundations of promoting health and wellness. Students explore a variety of perspectives and examine the Canadian health system and health promotion strategies, later presenting course content through projects like Photovoice and Infographics.

HSCI 4950 Senior Seminar - Students use primary research literature to explore how modern research techniques, research design and data analysis are advancing human health and wellbeing. Seminars include engaging research article presentations by faculty and students, followed by focused discussion and critique of the presented research.

Reading and Comprehending Material

Visual literacy is integrated into coursework throughout the program, providing students with expanded opportunities for creating, interpreting, and analyzing visual representations of data in diverse formats like graphs, charts, tables, diagrams, and infographics. Numeracy is a critical component of health science, and students' quantitative analysis skills are strengthened through dedicated courses as well as practical courses that introduce statistical concepts for real-world health applications. Interpretation of data is particularly relevant given the importance of experimental studies conducted within health science.

Example Courses

MATH 1120/1130 & 1230 Differential Calculus & Calculus for Life Sciences - Students study limits and differentiation of algebraic and elementary transcendental functions and apply these skills to graphing, optimization, and modelling in biological sciences.

STAT 2335 Statistics for Life Sciences - Students learn descriptive statistics, elementary probability, probability distributions, in particular, the binomial, normal, t and chi-square distributions, confidence intervals and hypothesis testing for population means, and proportions, as well as linear regression, and the chi-square goodness-of-fit test.

Working Effectively with Others

Students' ability to navigate interpersonal dynamics are fostered through in and out of class opportunities to work with peers, instructors, and the broader community, with emphasis on building empathy, conflict resolution, and effective collaboration in health science contexts. Opportunities for teamwork and leadership skills are available through course assignments that require collaborative learning and shared responsibility.

Example Courses

HSCI 3110 Applications of Health Science - Students use assessment tools to explore their aptitudes and career interests to choose, apply for, engage in, and document volunteer placement positions in various fields of health science.

HSCI 4110 Health Program Planning and Evaluation - Students understand the processes for developing, implementing, and evaluating community or public health programs grounded in theory and practice. Students practice teamwork skills to accomplish both individual and group objectives using various tools and resources to design health programs for diverse populations.

Analyzing and Thinking Critically

Students are equipped with the ability to critically analyze complex texts and synthesize information effectively from credible sources of information that they can search, qualify, and extract correctly.

Example Courses

BIOL 3180 Life Science Research Methods - Students explore concepts of research design and learn methods for collecting data and conducting appropriate statistical analyses for critical evaluation of literature. Students also develop a research proposal and present research findings, practicing their writing through practice, revision, and assessment from peers and the instructor.

HSCI 4380 Critical Evaluation - Students examine various types and levels of scientific evidence in the literature such as systematic reviews, meta-analyses, and realist syntheses, using advanced search, retrieval, and synthesis skills, to translate the research findings to evidence-based health care and informed decision making.

Resolving Issues or Other Problems

Creative thinking and problem-solving are promoted by providing students with opportunities to learn about and consider past, current, and emerging health trends and challenges. Through curation of case studies, select topics, and project-based learning in multiple courses, innovative approaches, adaptive thinking, and life-long learning are introduced in academically grounded and science-based ways.

Example Courses

SOCI 2280 Sociology of Health, Disability, and Society - Students learn about the social, cultural, economic, and political factors, construction, and experiences of health, disability, and society, and the structure of Canada's health care system and delivery, professionals, users, and current policy and health issues.

HSCI 4245 Populations & Policy - Students will study the various participants in the health policy process, the different arenas where health policy is created, and the numerous policy instruments that are used.

Organization, financing, and delivery of health care are reviewed, as well as current health policy issues in both British Columbia and Canada in comparison to those in other nations with specific attention to the United States and Europe.

Learning on Your Own

Students are cultivated as lifelong learners who are adaptable and self-directed, with structured guidance for independent study and self-reflection. Students' skills to identify and tackle research questions of their own for real-world applications are also fostered through Research Project courses.

Example Courses

HSCI 4199 & 4299 Research Project 1 & 2 - Develop a research proposal with budget that can be conducted in the field or laboratory setting, then reflect upon the experimental outcomes and make suggestions for future direction.

HSCI 4950 Senior Seminar - Students use primary research literature to explore how modern research techniques, research design and data analysis are advancing human health and wellbeing. Seminars include engaging research article presentations by faculty and students, followed by focused discussion and critique of the presented research.

While considerable opportunity for development of these skills already exists within the degree program, certain skills are more heavily emphasized than others. For example, students leave the program with strong writing skills and reading comprehensions skills, in large part due to the numerous lab reports and term papers they complete. Other technical skills, for instance, laboratory techniques and proficiency in medical terminology are widely supported through the degree. However, there is a need to bolster the development of other health science specific skills and/or soft skills, in general. For example, while students are introduced to conventional tools and software (primarily for data analysis) throughout the program, the latest and emerging technology, especially related to artificial intelligence, would be a possible area of curricular development given its ability to disrupt and transform health and health systems. Moreover, fostering empathy and intercultural competence, through dedicated opportunities to engage with diverse populations, cultures, ways of being, thinking, and doing, is a priority. Additionally, skills in the areas of management and leadership may also be supported by projects and partnerships with healthcare facilities to enhance hands-on training. Thus, the Health Science program is well-positioned to build on its existing foundation in basic sciences, and evolve with an intentional focus on health science that better aligns the graduate skill outcomes with the emerging trends, opportunities, and challenges of human health and care.

2.3. Curriculum Assessment

The complete course requirements for the BSc in Health Science programs are listed in Section 1.1. The full curriculum map for each course, in which we have listed each of the CLOs and aligned them with the respective PLOs, is provided in Appendix B.

In addition to mapping outcomes, further development is recommended in the area of curriculum-level assessment of knowledge, skills, and attitudes. While course-level assessments are in place, there is currently no overarching framework to evaluate the extent to which students achieve the broader competencies expected at the program level (see below).

Specific areas for improvement include:

- **Knowledge:** Assessment strategies vary across courses, and additional tools may be needed to evaluate cumulative knowledge integration over the degree (e.g., capstone assessments, longitudinal reflections).

- **Skills:** Applied skills such as data interpretation, literature appraisal, laboratory techniques, and presentation skills are assessed at the course level but would benefit from a more consistent scaffold across years and alignment with program outcomes.

- **Attitudes:** Affective components such as ethical awareness, professional conduct, equity literacy, and openness to diverse perspectives are not consistently assessed and could be better integrated through rubrics, reflective writing, peer assessment, or experiential learning evaluations.

A comprehensive assessment framework that spans all three domains may be developed to link course-level assessments to program-level learning outcomes. This would provide a clearer understanding of student achievement across the degree and support continuous improvement in instructional design, alignment, and accountability.

Program Learning Outcomes

PLOs articulate the knowledge, skills, and attitudes that students are expected to develop and demonstrate by the time they complete the program. Ideally, these outcomes align with the program's overall purpose, scaffold throughout the curriculum, and reflect the graduate profile. The current PLOs were not established at the time of the program's initial development. Instead, they were created during the first program review cycle (2019–2024) in response to emerging program needs and priorities. Sixteen PLOs were developed at that time.

Current PLOs:

1	Examine fundamental biological concepts, processes, and systems of the human body, including the structure, function, and properties of the molecules of life, cells, and organ systems in relation to homeostasis and health.
2	Examine fundamental concepts, processes, and systems of chemistry, including matter and chemical bonding; quantities in chemical reactions; solutions and solubility; acids and bases; as well as nomenclature, structure, and properties of organic compounds in relation to health and the human body.
3	Examine fundamental concepts, processes, and systems of physics, including classical mechanics (Laws of Motion), electromagnetism, relativity, and thermodynamics.
4	Solve numeric problems and interpret data related to health sciences using mathematical concepts, including algebra, basic probability, descriptive statistics, inferential statistics, and multiple variable analyses.
5	Apply health science language and terminology appropriately to communicate clearly, concisely, and correctly in written, spoken, and visual forms.
6	Investigate health sciences and science-related questions, problems, and evidence using the scientific method and evidence-based approaches.
7	Develop an awareness of the different components of health science and their inter-relationships.

8	Develop a critical understanding of health issues.
9	Assess how health information is presented, interpreted, and applied.
10	Develop critical knowledge of health information and technologies.
11	Develop facility with the research techniques appropriate to effectively explore health information.
12	Internalize an efficient approach to being well-informed about health information and issues.
13	Critically analyze health issues by applying current knowledge and perspectives to a range of health questions.
14	Execute capacity to foster human health based on an understanding of current knowledge, techniques, and innovative thinking.
15	Apply understanding of health issues by seeking solutions through avenues such as research, experiential engagement, and innovation.
16	Prepare a personal strategy and plan for academic, career, and professional development in health science or related field.

Following a review of these outcomes, several issues have been identified:

1. Excessive number and overlap of outcomes. Sixteen outcomes is unusually high, creating redundancy and dilution of focus. Several PLOs cover overlapping domains (e.g., health information literacy appears in PLOs 9, 10, 11, and 12; critical thinking appears in PLOs 8, 13, 15). Best practices from the KPU Teaching and Learning Commons recommend programs maintain fewer than twelve PLOs for clarity and alignment purposes.

2. Lack of clarity or specificity in outcomes. Some outcomes are too broadly phrased or combine multiple competencies (e.g., PLO 14 references "current knowledge, techniques, and innovative thinking" without specifying any particular domain or skill). Other outcomes read as aspirational rather than measurable or observable (e.g., PLO 12: "Internalize an efficient approach to being well-informed…").

3. Missing or underdeveloped outcomes. For example, (1) Digital and data literacy: PLOs reference "technologies" and "information" in a general sense, but there is little attention to the use of data tools, platforms, or digital decision-making that is common in public health and health services (2) Systems thinking and equity: Concepts related to structural determinants of health, policy systems, or equity-oriented frameworks are not explicitly addressed, despite their relevance in current health science practice; and (3) Career and professional readiness: While PLO 16 refers to preparing a personal strategy for development, there is little integration of workplace competencies, applied communication, or teamwork expectations.

4. Limited emphasis on attitudinal and professional competencies. While knowledge and technical skills are relatively well represented, professional dispositions and attitudes (e.g., ethical reasoning, cultural humility, interprofessional collaboration, self-awareness), are not clearly articulated. These competencies are increasingly emphasized in the health field, and are appropriate additions to a contemporary Health Science curriculum.

A full revision and reduction of the PLOs is recommended as part of this program review. The new outcomes should: be concise, clearly stated, and aligned with program purpose; represent a balance of knowledge, skills, and attitudes; map effectively to course learning outcomes and assessment strategies; reflect competencies expected of graduates entering both the workforce and graduate/professional study and; incorporate guidance from KPU's institutional learning outcomes, the polytechnic mandate, and sector-informed expectations.

Results of Curriculum Assessment

The CLOs across many of the health science courses are numerous. Guidance indicates best practice as having between 5-7 per course, yet several of the health science courses (e.g., HSCI 1115, 3110, 4130, 4170, 4199, 4245, 4990, and 4995) have eight or more learning outcomes. The curriculum assessment has revealed several areas of concern. For example, certain CLOs (e.g., HSCI 3110, Develop professional identity based on self-reflection of practicum experience) map only to one PLO (e.g., 16, Prepare a personal strategy and plan for academic, career, and professional development in health science or a related field). This particular PLO is only accomplished through and maps to the CLOs for HSCI 3110 Applications of Health Science. There is also evidence that several PLOs are primarily if not entirely supported via elective courses within the degree program (e.g., PLO 16). If students do not take these optional courses, they will leave the Health Science program without having achieved certain outcomes at the program level. Moreover, there are obvious gaps where the progression of "Introduced (I)", "Developing (D)" and "Advanced (A)" attributes across course levels is not entirely logical. For example, the lower-year health science courses (e.g., HSCI 1115, HSCI 2220) include outcomes primarily within the "I" category (as expected). However, because most of the health science courses are at the third- and fourth-year levels, there is a substantial jump to the "A" level that bypasses the "D" level altogether.

Key findings from the curriculum assessment are highlighted below:

- CLOs were developed prior to the formalization of PLOs. As a result, many outcomes do not align well with either the PLOs or the strategic goals of the program.
- Several CLOs do not meet one or more of the SMART criteria (e.g., specific, measurable, achievable, relevant, time-bound) and a handful of PLOs are extremely vague, making them difficult to measure and/or assess.
- There are gaps in desired curricular knowledge, skills, and/or attitudes, where content is either not addressed at all or only present in a few courses (e.g., epidemiology, Indigenous Health).
- The PLOs should be modified and reduced in number to reflect current discipline needs. Reducing the overlap will also enable better assessment of curricular alignment going forward.

Recommendations

- Undertake a comprehensive curriculum mapping and scaffolding initiative to align course learning outcomes (CLOs) with revised program learning outcomes (PLOs), addressing redundancy, misalignment, and missing competencies.
- Reduce the total number of PLOs to fewer than twelve and ensure they reflect a balance of knowledge, skills, and attitudes, including emerging domains such as equity, digital literacy, and career readiness.
- Revise the distribution of HSCI-coded courses and content, particularly in Years 2 and 3, to improve program cohesion and identity. Develop a set of core HSCI-coded courses at each year of the program, potentially focused on health systems, public health, or applied health science skills.
- Align curriculum with high-demand employment sectors by mapping core competencies and skills to career clusters such as (1) clinical and allied health, (2) research and academia, (3) population and public health, (4) health administration and management, and (5) biotechnology and pharmaceuticals.

3. Program Relevance and Demand

3.1. Relevance

Are the program learning outcomes relevant to the current needs of the discipline/sector?[1]

The Health Science program currently has 16 PLOs. For 13 of these, more than 60% of alumni felt the outcome was very relevant or essential to their career goals (Appendix C). Items that were rated as not at all relevant and/or only slightly relevant, where between 25 and 50 percent of respondents indicated as such, pertained to PLO 3 (Examining fundamental concepts, processes, and systems of physics) and PLO 4 (Solving numeric problems using mathematical concepts). Overall, 90% of alumni were either somewhat satisfied or very satisfied with the curriculum offered within the Health Science program. Interestingly, satisfaction among current students was lower, with 48% somewhat satisfied and 14% very satisfied with the curriculum (Appendix D). Additionally, alumni reported high satisfaction with the instruction received in the Health Science program. For instance, one-third of alumni respondents were somewhat satisfied, with another 47% very satisfied. For current students, 39% were somewhat satisfied and 19% were very satisfied with the instruction they have received within the program. Similar findings, particularly with respect to both satisfaction and quality, are reflected in the survey results conducted among program graduates (Appendix H). Of 16 respondents, 100% were satisfied or very satisfied with the education received in the Health Science program. Equally, all respondents rated the quality of instruction as very good, good, or adequate. In contrast, usefulness was scored slightly lower than the Ministry target of 90%, with 86% of respondents describing the Health Science program as either somewhat or very useful in their current occupation. This is slightly higher than current students, where approximately 80% somewhat agree or strongly agree that the program's curriculum is relevant to their postgraduate and/or career goals. These findings may differ as baccalaureate graduates have additional context within the working world to make such a judgement.

Regarding strengths of the Health Science program curriculum, two main themes emerged from the open-ended responses of students and alumni (Appendices C & D). Specifically, respondents noted the variety of courses offered, including those in the basic sciences in complement with other fields (e.g., sociology), as a strength of the program. Additionally, the 'hands-on' learning and training received, particularly through lab-based courses was also highlighted as a strength. Students and alumni also offered suggestions to improve the curriculum. In general, students reported a greater desire for health-based courses, interdisciplinary and/or specialized courses at the upper-years, and more connection to community and/or industry through projects, internships, or co-op opportunities. Alumni responses were quite similar, with several respondents noting the need for a greater diversity of courses within health science to allow for a more tailored educational experience. For instance, one respondent stated "For students invested in the biological sciences, the program was great. I think more options (e.g., healthcare administration) would be highly beneficial to those who are not expecting to go into graduate programs or spend their futures in a laboratory setting." Similarly, another alumnus commented on the relatively small difference between the structure of the health science program and the biology program. For example, "There weren't that many differences in the courses. I hoped that it was more public health and life sciences focused instead of being more biology / science heavy. I took around 8 health science courses, which I think should have been more considering I chose this program instead of biology."

Respondents from the discipline/sector surveys also deemed the program to be relevant (Appendix E). In fact, replies from industry were relatively similar to those from alumni. Respondents rated twelve of the PLOs as very important or essential for entry-level employees to demonstrate. PLOs that were deemed

[1] Data reported in this section was obtained from a dashboard that is under development.

not at all or only somewhat important pertained to PLO 2 (Examining fundamental concepts, processes, and systems of chemistry), PLO 3 (Examining fundamental concepts, processes, and systems of physics), and PLO 11 (Developing facility with research techniques). Industry respondents were also asked to comment on other skills, training, or knowledge that an entry-level applicant should have. While many of the skills mentioned are incorporated within the degree already, a strong emphasis on the need for communication skills, both oral and written was suggested. Further, respondents pointed to knowledge translation and/or dissemination skills, including the ability to write in plain language, and a basic understanding of the health system, patient-centred care, and social determinants of health, as necessary. Respondents also identified emerging trends related to artificial intelligence, big data analytics, planetary health in relation to population health, and health equity (e.g., Indigenous health, racism) and culturally-safe and trauma informed approaches, as important for consideration. It will be important to determine whether and if so how to incorporate some of these topics into the program, either through the development of new courses or by updating existing courses to explicitly address these topics.

According to faculty, the relevance of the Health Science program is high (Appendix F). Of the 16 program learning outcomes, faculty generally felt each was somewhat or very relevant to the discipline, with the exception of PLO 3 (Examine fundamental concepts, processes, and systems of physics) where just 37% agreed. All other PLOs were deemed somewhat or very relevant by at least 65% of faculty. Most (73%) faculty somewhat or strongly agreed that the program curriculum is aligned with the evolving needs of the healthcare and health sciences sectors, addressing current labour market demands and industry standards. Seventy-three percent of faculty also agreed that the program equips students with the specialized knowledge, skills, and practical experience required for successful careers in healthcare, health science research, policy-making, and administrative roles. And, 84% of faculty agreed that the program prepares students for advanced education and training opportunities in health science, enabling pathways into specialized fields such as medicine, public health, research, or healthcare management. Strengths of the program curriculum were noted as offering a solid foundation in basic science and laboratory techniques, along with scientific literacy and research for knowledge generation. Ideas for curricular improvement were considerable. For example, faculty pointed to the need to restructure the degree, for instance, by limiting the number of required courses and subsequently broadening the elective offerings, or by developing degree specializations. Other faculty pointed to the importance of exploring emerging health technologies, providing greater integration of Indigenous, global, and public health content (e.g., virology, epidemiology), focusing on both the art and science of evidence-based decision making, and placing a greater emphasis on communication, leadership, and data analysis skills in the curriculum. Other faculty noted that further development in the area of co- or extra-curricular options (e.g., networking, volunteering) would be valuable and fit with the applied nature of KPU's mandate.

Does the program have the connections to the discipline/sector needed to remain current?

The Health Science PAC was formed in 2017. The PAC includes broad representation from a variety of sectors within the discipline, as well as members from within KPU. The PAC currently consists of eleven members (5 voting, 6 non-voting), outside and within KPU. External PAC members represent a broad spectrum of sectors including academia, government, health authority, non-profit, industry, and research. The wide cross-section of individuals allows for a diverse set of experiences within the health sector to be represented, helping the program maintain currency. The Health Science PAC usually meets 1-2 times per year to provide input into the direction of the program, however there have been interruptions (e.g., COVID-19 pandemic) at various points over the past few years. The most recent meeting was held in May 2025. Meetings typically start with a review of the current programs (major, Honours, and minor) and any relevant updates, followed by an open discussion related to prompts or questions brought forward by KPU. The PAC standard operating procedures have recently been modified by the FoS Dean's office in hopes of making the meetings more interactive and useful for the program itself. As such, a summary of accomplishments, updates, etc. is provided to members prior to the meeting so that the majority of the

time spent together can be used to converse about industry trends and discuss ways to improve the program overall.

In addition to maintaining connections to the discipline through its PAC, faculty within the Health Science program actively engage with the broader academic and professional community in several ways:

Faculty maintain active membership or registration with professional, academic, government and crown, and/or community organizations such as the BC Association of Kinesiologists (BCAK), College of Dietitians of BC (CDBC), College of Health and Care Professionals of British Columbia (CHCPBC), Canadian Public Health Association (CPHA), Canadian Society for the Study of Higher Education (CSSHE), National Collaborating Centres for Public Health (NCCPH), Society for Epidemiologic Research (SER), and other relevant discipline-specific associations based on individual areas of expertise.

Faculty also engage in outreach and knowledge mobilization activities, including:

- Inviting guest speakers from the health sector into their classrooms, such as professionals from Fraser Health Authority, BC Centre for Disease Control (BCCDC), WorkSafeBC, Options Community Services, and health promotion consultants.

- Facilitating community-based assignments in partnership with local health and non-profit organizations (e.g., Fraser Health Authority, City of Surrey).

- Supporting student volunteer placements with health-sector partners (e.g., Canadian Red Cross, Canadian Blood Services, community public health units, and local advocacy organizations).

- Contributing to health education events and panels, such as World Health Day programming or community health awareness campaigns.

These activities support the program's efforts to remain current with evolving trends in health science education and practice, while also enhancing student learning through real-world engagement. They reflect the faculty's commitment to integrating academic knowledge with applied and community-responsive perspectives, consistent with KPU’s polytechnic mission.

Students taking HSCI 3110 Applications of Health Science volunteer with various organizations including Canadian Blood Services, City of Surrey, and Fraser Health. Connections to these organizations and others continue to be fostered through other courses within the program (e.g., HSCI 1115 Introduction to Health Science, HSCI 4110 Health Program Planning and Evaluation, HSCI 4140 Health and Aging) via work-integrated learning projects. The Health Science co-operative education degree option also connects students within the program to health-sector organizations. Additionally, the Health Science program has ties with both the AGC and the Institute for Sustainable Food Systems at KPU. These connections enable undergraduate students to complete real-world research projects that are rooted in industry and government needs. For example, students in HSCI 4990/4995 (Honours Thesis Project I and II), have completed projects on (1) whole exome sequencing of ataxia patients to find causative mutations (BC Ataxia Society) and (2) determinants of food insecurity among immigrants (Seeds of Change Surrey).

Graduates of the program are now working in numerous sectors, including providing direct patient care within public and private healthcare settings, and in other non-clinical roles (e.g., health research, health administration, community health). As such, faculty contact with alumni is on an ongoing basis. Some faculty continue to work with graduates on research projects and others have chosen to mentor former students along their continued educational journey (e.g., graduate school applications, reference letters).

Alumni continue to attend the research presentations each April in support of current research students (HSCI 4299, HSCI 4995). Several alumni have given their time as guest speakers (e.g., HSCI 3110). Countless others have offered to do the same and/or take part in future networking and/or career panel events. That said, only 35% of alumni felt they had been provided with opportunities to stay connected to the Health Science program (Appendix C). There is an opportunity to capitalize on these offers and further strengthen connections with program alumni who are currently working in health-related positions. Implementing such opportunities will help students to better visualize potential career paths.

Despite the program having significant connections to industry, for some alumni, interactions with outside professionals were reported as minimal during their time in the program. For example, just 21% felt the program prepared them, either very well or extremely well, for careers in health science via direct contact with industry professionals (e.g., guest lectures, mentorship, career panels) (Appendix C). Further, only 14% said that they somewhat or strongly agree the program provided them with opportunities to develop connections with industry or potential employers (e.g., conferences, career fairs). As such, alumni feel strongly that more networking opportunities are needed to build professional connections. As one alumnus wrote "I think having an event with alumni talking on a panel would be great for future and current students. Having alumni who pursued different careers post-graduation provide their opinions and information regarding their career path would be highly beneficial." Other alumni suggested a health science fair or annual alumni networking event to support on-going connections with the program. More communication related to the happenings of the Health Science program overall was also noted.

Perhaps surprisingly, just 8% of discipline/sector respondents stated being very familiar with the program (Appendix E). For those more familiar with the Health Science program, words such as research, evidence-based, hands-on, and multidisciplinary were chosen to describe the program. Respondents from the discipline/sector surveys reported modest satisfaction with the opportunities they have to stay connected to the Health Science program. For example, 25% reported being somewhat satisfied and only 17% reported being very satisfied. Despite this, there was very high interest in strengthening connections. Nearly all (92%) respondents said they were somewhat or very interested in participating in projects that connect students with the industry or sector. Respondents also provided some ideas for the program to consider when thinking about how to bolster such connections. For example, providing opportunities for industry to present to students, hosting networking events, distributing newsletters, and engaging in research were all suggested for consideration. One respondent requested regular communication related to how to apply for or host students, sentiments that were echoed by another respondent who suggested increasing dialogue with organizations to try and facilitate more partnerships.

Faculty tended to align with discipline/sector and alumni responses by highlighting the need for greater connection to industry and opportunities for networking. For example, just over half (56%) of faculty felt that the program prepares students for careers in health science via contact with industry professionals (e.g., guest lectures, internships, mentorships) very well or extremely well (of note, only 21% of alumni felt the same) (Appendices C & F). Approximately 31% of faculty felt the program prepares students very well through networking opportunities (e.g., conferences, career fairs). Again, just 7% of alumni felt similarly. These present as significant discrepancies between the providers and end-users of the program, and are thus worth exploring further in future. Regardless, it appears these methods are not being well utilized and as such, there is significant opportunity to bolster connection between the program and industry and/or health science professionals. Faculty suggested multiple potential avenues for doing so, for instance, by establishing additional opportunities for research and interactions with the community (e.g., conferences, guest lectures, practicums, career panels). In doing so, the program can better support student learning outcomes and establish a program that is relevant for students moving into an evolving discipline.

Does the program include appropriate Indigenous content?

During the first Health Science program review (2019-2024), it was decided that INDG 1100 Introduction to Indigenous Studies should be added into the program as a 'select one of the following 'course options for students during year 1 of their studies. Outside of including INDG 1100 as an optional part of the curriculum, there has been relatively minimal progress toward achieving authentic indigenization related to the delivery of and/or content within the Health Science program. There is consequently much room for improvement. Delivery of material could be improved by creating a more holistic, reflective, and/or relational degree program and classroom experience. Within courses, faculty could engage students with teaching methods and assignments that are real-world in nature, rooted in alternate teaching modes, and offer more frequent experiential learning. Moreover, there is also room for a broader interpretation of acceptable Honours research projects by including options that are qualitative or evaluative in nature. That said, some of the methods that certain instructors within the program use are currently recognized as best-practices with respect to Indigenizing the curriculum. For instance, several classes involve students working together on small-group activities. Other instructors have engaged in a 'flipped classroom' format in order to use class time for deeper learning through discussion, case studies, and problem solving. Greater indigenization of teaching methods could be supported through additional resources provided by the Teaching and Learning Commons at KPU. In terms of content, there is a unique opportunity to incorporate additional Indigenous knowledge, events, and issues throughout the program. For example, similar to the new BIOL 1492 Indigenous Biology course, developing an HSCI course related to Indigenous Perspectives in Health and Wellness could be done to support indigenizing the curriculum further. It would also be beneficial to explicitly incorporate Indigenous specific content into courses that discuss the determinants of health, health policy, healthcare ethics, and/or health communication, among others. Assessment methods that allow students to demonstrate alternative ways of understanding, as opposed to strictly exam-based, may also be worth exploring where appropriate.

Recommendations

- Investigate expanding co-operative education, practicum and/or research placements in collaboration with employers and professional organizations, including Fraser Health, BCCDC, and local community partners.
- Maintain communication channels with relevant bodies (e.g., PAC, alumni) to determine graduate outcomes and understand the evolving workforce expectations.
- Consult with relevant groups (e.g., KPU Indigenous Advisory Committee and Elder-in-Residence, First Nations Health Authority, KPU Teaching and Learning Commons) regarding strategies to decolonize and Indigenize the curriculum.
- Continue to integrate content and assessments that reflect real-world health challenges and sector trends, such as chronic disease prevention, aging populations, and culturally safe care.
- Assess whether the physics and/or math content of the program should be modified to more accurately reflect the needs of the health science field.

3.2. Faculty Qualifications and Currency

What is the collective expertise available to deliver the program?

The Department of Biological and Health Sciences consists of 20.79 FTE (regular) faculty, most of whom are employed full-time. Non-regular, contract faculty are frequently hired when needed. Fifteen faculty (13.5 FTE) teach courses within the Health Science program. Of these, twelve teach primarily BIOL-coded courses and three (2.5 FTE) exclusively teach HSCI-coded courses. Faculty have a broad expertise in both basic and applied science, including areas such as genetics, anatomy and physiology, pathology, nutrition, and health promotion. All faculty meet or exceed the minimum educational qualifications established by the Program (e.g., Master's degree in Biology, Health Science, or related field required, PhD preferred, subject matter specialization may be required). All faculty members teaching directly within the Health Science program have a PhD or MD terminal degree. Some faculty also have professional training and practical experience in a health-related field (e.g., Registered Dietitian, Medical Doctor), something that should be strongly considered for future faculty hires. See Appendix G.

Faculty maintain currency in their specialized areas through a variety of paths including research, teaching, and scholarship, as well as community engagement and/or professional development and continuing education. These activities include but are not limited to:

- Attending KPU Workshops offered by the Teaching and Learning Commons
- Engaging in research with industry and/or community partners
- Supervising undergraduate student research projects
- Completing clinical training or practical work experience
- Attending regional, national, or international conferences / workshops
- Reading recent Journal articles and other current literature
- Publishing research manuscripts in academic journals

As KPU is designated by provincial legislation as a special purpose teaching university, infrastructure, funding, and opportunities for professional development and scholarly activity (e.g., research) are limited. Strides have been made within the Office of Research Services to support greater research activity, and

most research in the department centers around student learning. In general, between 8-10 faculty members supervise or co-supervise undergraduate student research projects in any given year. These opportunities provide excellent hands-on training and skill development for students; however, this work is especially challenging for faculty to engage in on top of their already heavy teaching responsibilities (e.g., six lab-based or eight non-lab-based courses per year). Faculty are not provided with protected time or additional compensation for taking part in research, therefore student supervision has become an issue of workload inequity within the program. Some faculty members have been able to secure external research funding to carry out projects that align more closely with their professional interests, however these financial streams are not typically consistent. These challenges, along with the recent growth seen within the Health Science program, are making it increasingly difficult for faculty to support all students who wish to engage in research activities. The benefits of research to faculty and students (e.g., acquiring new skills, maintaining currency, strengthening industry and community partner connections, etc.) are numerous, thus considering ways to overcome these issues will be key. Faculty also participate on various institutional committees (e.g., Senate Standing Committee on Research, Faculty Council, Student Leadership Awards Adjudication) and/or support external community-based organizations (e.g., Seeds of Change Surrey). Some faculty also hold membership with regulated health professions (e.g., College of Health and Care Professionals BC, College of Dietitians of BC, BC Association of Kinesiologists, etc.) where they are required to complete annual continuing education to maintain practice competencies. Other faculty also serve as reviewers for peer-reviewed publications, and some faculty have connections to other academic institutions (e.g., BCIT Health Science, UBC Medicine, UBC Land and Food Systems) or complete community-based volunteer activities (e.g., Open Doors, Open Minds). Overall, there is significant expertise available to deliver the current curriculum.

Collectively, does the department have the expertise needed to deliver the curriculum?

The Health Science program was developed by faculty with a strong background in biology. As a result, the degree was designed around a core set of required basic science courses that were to be complemented by health science and open elective options. The breadth and depth of faculty expertise and knowledge within the Department meets the needs of the current curricular requirements of the Health Science program's courses. Additional expertise in certain areas (e.g., epidemiology, kinesiology, nutrition, cancer, virology) is at times utilized to support student research projects and/or as part of the HSCI 4950 Senior Seminar course to enhance the learning outcomes and experiences of health science students. There is also some untapped potential among faculty within the department who have expertise in other relevant areas (e.g., medical genetics). Thus, there is considerable room for growth within the degree to bolster the number and type of health science courses offered to better reflect the expertise of current faculty and recent industry trends, especially as the program aims to meet the needs of students who desire non-clinical roles upon their graduation from KPU.

Due to the recent departure of two faculty members within the Department of Biological and Health Sciences, we were able to regularize 0.5 FTE and hire 1.0 FTE specific to the needs of the Health Science program. These faculty members have health professional training and bring deep expertise in areas that are directly applicable to the Health Science program, both currently and in the future to support desired curricular changes. One problem for the program is that there are only three faculty members (2.5 FTE) teaching across the vast majority of HSCI-coded courses. As a result, expertise to teach a particular course, particularly at the upper years, often resides with a single person. A leave of absence, for health or other reasons, and/or a retirement, could leave the program exposed to significant disruption. As the program continues its growth trajectory, it will be important to hire additional faculty with expertise to teach a broad range of health science courses.

Recommendations

- Continue to seek additional hiring opportunities to match program growth, ensuring that future candidates have both academic and practical experience in the field of health science.
- Explore the possibility of providing protected time for faculty that actively engage in research that includes and supports the development of students.

3.3. Student Demand

Who takes the program?[2]

Over the past five years, the majority of health science students have been female (67-70%), a percentage that is higher than FoS overall (55-61%). The percentage of students enrolled in the Health Science program who are 22 years or younger has declined in recent years from 89% (2019/2020) to 74% (2023/2024). Consequently, the number of mature students within the program has increased from 11% to 26% over this same time period. The trend of an increasing number of older students is not apparent across FoS, where the percentage of students who are 22 years or younger has continued to range between 70-76% since 2019/2020. The Health Science program does not rely heavily on international students. Typically, the percentage of international students enrolled in Health Science has ranged between 15-20% of total students. Across FoS, these values are much higher, with international students making up 34-39% of all students over the past five years. (Appendix H).

Based on responses from the student survey, the top reasons students reported for choosing to enroll in the Health Science program at KPU were to qualify for graduate studies (45%), to prepare for a specific career or job (40%), and to improve individual job prospects and/or earning potential (10%) (Appendix D). These findings are not surprising but should be considered carefully when thinking about future program changes. With slightly less than half of all students desiring to take graduate studies, it will be important to ensure the Health Science degree is also meeting the needs of those wishing to enter directly into a specific job or career after graduation.

Is demand for the program sustainable?

The BSc in Health Science program was launched in 2014 with its first graduates (five) in 2018. Since then, the program has had relatively strong enrollment, particularly over the last five years. With the exception of a small decline in student headcounts in health science courses across the 2020/2021 and 2021/2022 academic years (when uncertainty around online learning occurred as a result of the Covid-19 pandemic), the Health Science program has showed steady growth. Overall, between 2019/2020 and 2023/2024, there was a 38% increase in student headcount in health science courses. In comparison, there was an 11% decline in enrollment in FoS courses across this same time period (Appendix H).

Over the past five years, there have been similar upward trends in terms of the number of students enrolled in the Health Science program (i.e., health science declared). For example, there were 44 declared BSc in Health Science students in 2019/2020 and 90 declared BSc in Health Science students in 2023/2024, a 105% increase (Appendix H). Similar gains have been shown with the Minor in Health Science option which was introduced in 2022. In its first year (2022/2023), there were four students declared into the minor degree program and nine declared during the following year (2023/2024). Total headcount

[2] Data reported in this section was obtained from a dashboard that is under development.

(intended and declared) increased by 17% between 2019/2020 and 2023/2024, whereas FoS total headcount declined by 3% across this same period. Of note, there continues to be a large number of health science intended (or undeclared) students within health science, some of which may be inflated. These numbers will likely also reflect students who enroll at KPU with the intention of applying to the Bachelor of Science in Nursing (BSN) program since there is not currently a nursing intended designation available to choose from. Implementing a nursing intended designation would make it much easier for the Health Science program to track its students in and out of the program, ultimately assisting with decision-making (e.g., course planning, program demand) over time.

The enrollment trends for students pursuing health science at other public post-secondary institutions within BC generally mirrors the overall upward growth that KPU has seen. Between 2018/2019 and 2022/2023, the number of students enrolled in health science programs increased from 4,208 to 4,963, respectively (18% increase) (Appendix H). Overall enrollment in health science is largest at SFU (Bachelor's Degree) (1,684 students in 2022-2023) (20% increase from 2018/2019 to 2022/2023) followed by Langara (Associate Degree, Certificate, Diploma) (1,425 students, 14% decrease from 2018/2019 to 2022/2023) and TRU (Bachelor's Degree) (1,075 students, 14% increase from 2018/2019 to 2022/2023). Over this same time period, KPUs program has grown by 169%, from 29 to 78 students. These trends indicate a continued demand for health science programs in BC, particularly from major degree granting institutions within the Lower Mainland. Given the student numbers at Langara (and its close proximity to KPU Richmond), there is a significant opportunity to market our program as an alternative possibility (from SFU) for students wishing to move into a four-year health science degree. Additionally, the large number of students pursuing a diploma, certificate, or associate degree in health science at Langara indicates considerable interest in this field within the region. KPU may wish to consider whether developing similar short-term educational options (e.g., 2-year diploma) would be appropriate to attract additional students to the university (who may then return in future to complete a BSc degree). Similarly, there are no Master's degrees in health science in the Lower Mainland (although there are many other relevant graduate degree options, e.g., Master of Public Health, MSc in Medical Genetics), so this could be an untapped market for consideration in future.

In BC, there are five post-secondary institutions that offer similar baccalaureate degree programs to KPU's Health Science program (Appendix I), with a handful of other institutions offering only an associate degree, certificate, and/or diploma that is health science-related. Of these, SFU's health science program is considered the most similar to KPU in terms of curriculum and geographic proximity. Appendix I compares the programs that offer a BSc in Health Science (or related degree) across BC. Some of the features that make KPU's Health Science program unique relative to other programs include: (1) designation as a special-purpose teaching institution with small class sizes relative to larger research institutions (e.g., SFU, UVic), (2) the polytechnic mandate and focus on experiential learning, (3) and the option to take first- and second-year courses across multiple campuses. The Health Science program at KPU aligns with other institutions in two primary ways: (1) presence of a co-operative education degree option and (2) inclusion of an Honours degree option.

Key differences between the BSc in Health Science program at KPU and other health science-related baccalaureate degree options offered at BC institutions are as follows:

- KPU's Health Science program requires the highest number of credits of all institutions with comparable degree programs, at 124-126 (major) or 128-130 (Honours). KPU's program is heavily

focused on the basic sciences, with numerous required lab-based courses, especially in the upper-years, which increases the credit total overall.

- Most other institutions in BC offer some sort of degree specialization, primarily in the form of streams (e.g., biomedical, life sciences, health behavior change, public health and data) with different subsets of upper division courses.

- Nearly all other programs offer courses in epidemiology, environmental and/or global health, Indigenous health, and the Canadian health system. Health science courses are also typically offered at all four levels (e.g., first, second, third, and fourth-year) of the baccalaureate degree.

- When offered, other programs typically only include two anatomy and physiology courses, as opposed to the three that are currently included within KPU's program.

- KPU does not have a senior capstone or work-integrated learning project (outside of the senior research project options available) for students with interests outside of research to pursue.

Establishing degree specializations will enable more tailored and relevant learning to occur for students. Specializations may also allow for stronger demand for the program as students can take courses that are directly related to their future career path, thus improving post-graduate success and ideally, drawing the interest of new students. We have lost students to other programs within KPU (e.g., psychology) and elsewhere (e.g., SFU BA in Health Sciences) who felt the emphasis on basic and lab science courses in the upper-years of the degree did not fit with their goals or interests. Maintaining a BSc degree framework while incorporating a stronger social science component that is seen in more traditional BA degrees, could alleviate some of this attrition. These students, who want to work in the health field but in non-clinical roles, may find the Health Science degree at KPU more relevant to their needs if a specialization (e.g., sociomedical sciences) was in place. Additionally, a biomedical sciences specialization would still support those wanting to be employed in clinical roles after additional post-graduate education, by completing courses (e.g., virology) at KPU that support their goals.

The fill rate in health science courses increased slightly between 2020/2021 and 2023/2024, from 73% to 77%, respectively (Appendix H). In 2020/2021, there was an average of 23.9 seats filled (and 32.6 offered) and in 2023/2024 there was an average of 26.0 seats filled (and 33.8 offered). In comparison, the overall fill rate across FoS declined over the same period, from 71% (18.0 of 25.3 seats offered on average) (2020/2021) to 68% (17.9 of 26.5 seats offered on average) (2023/2024). The increased fill rate for health science is especially encouraging give that it occurred during a very challenging time for post-secondary education. KPU experienced budget cuts in 2019/2020 that resulted in changes to the number of courses being offered overall. And, in 2020/2021, particularly at the start of the Covid-19 pandemic, there was a lot of uncertainty around the temporary switch to online learning.

As can be typical for an institution with a history of being a college and thus a feeder school for larger academic institutions, demand for lower-level courses at KPU tends to be strong. Many students at KPU intend to only complete two years of post-secondary education (e.g., Associate Degree), where other degree-seeking students choose to complete their educational prerequisites at KPU before laddering into the upper years of a program at an institution like SFU or UBC. At the lower levels, it is expected that the number of filled seats will be higher given that there are typically more students to draw from. During first year, many students across the institution, health science-intended or otherwise (e.g., Arts, Business), will take HSCI 1115 to fill their degree requirements, evidenced by the greater number of offered and filled seats. Students in health science must complete HSCI 1115 and HSCI 2220, however other students choose these courses as a way to fulfill the science requirement within their respective degree.

In academic year 2023/2024, there were a total of 810 health science seats offered,[3] of which 625 filled (77%) (Appendix H). The fill rate for courses across each year was as follows: Year 1 – 13 health science sections (410 of 455 seats, 90%), Year 2 – 2 health science sections (69 of 70 seats, 99%), Year 3 – 2 health science sections (40 of 70 seats, 57%), and Year 4 – 7 health science sections (106 of 215 seats, 49%). (Note: HSCI 3110 – Applications of Health Science, HSCI 4199/4299 – Research Project I and II, and HSCI 4990/4995 – Honours Thesis Project I and II all require permission of the department to register due to capacity demands. These courses require volunteer placements (HSCI 3110) and faculty supervisors (HSCI 4199/4299 and 4990/4995) to be secured prior to registering into the course. It is not currently possible to offer all 35 seats for these sections even though these numbers are reflected in the data. Thus, the fill rate across Year 3 and 4 is actually stronger than what is indicated here. Regardless, it is apparent that the fill rate is significantly lower in the upper level courses. Opportunities to support student retention and/or ladder students into the program from other public and/or private institutions (e.g., Alexander College, Columbia College) should be pursued to limit the drop in fill rate that is seen within health science. Even still, the number of course enrollments by level within health science is similar to that of FoS overall, where a decrease in fill rate occurs across each subsequent year of a program.

All health science coded courses at KPU are 3-credits and therefore do not include a laboratory component. As such, the cost of instruction is $15,712.75 per HSCI section and with an average of 26 filled seats per course, KPU's average tuition revenue per course is $20,586.75 (net revenue = $4,874.00 per section on average) (Appendix H). The Health Science courses offered within the program are efficient to run, especially compared with other FoS programs where the average net revenue is negative $1,889.93 (due to the cost of 4-credit labs). Health science courses do not generate as much revenue as other 3-credit courses across the institution (e.g., Arts, Business), where average net revenue is $13,754.45 per course. However, the current program consists of both health science- and biology-coded courses, thus the cost to offer the program is higher than what is indicated above (e.g., $15,712.75). To help with HSCI student progression, additional funding to add 2nd year BIOL sections may be needed.

The average number of filled seats is higher in health science courses (26.0 seats) compared with all other undergraduate courses at KPU (24.4 seats), however, the overall percentage of seats filled by international students is lower in health science than other areas (20% versus 44%) (Appendix H). The difference in tuition generated is due to the greater inclusion of international students in other undergraduate courses. To increase average net revenue, the Health Science program can work to increase overall class size (filled seats) and/or consider increasing the number of international student enrolments where relevant and appropriate. International student enrolment may be particularly well served with the development of a 2-year Diploma program that ladders into the BSc degree.

Does the program have the capacity to meet demand?

Student demand does not currently exceed available seats. Withdrawal from the program tends to occur early on as students choose a different path after learning more about their educational interests. Attrition from the program may also be the result of students moving into nursing (currently, there is no nursing-intended designation at KPU so many students choose health science-intended as an alternative option to enter the institution). There are also students who transfer out of the program, either to another degree at KPU (typically within arts, for example psychology) or to another institution altogether (e.g., SFU Health Science). We have instructional capacity to meet student demand as the program exists in its current form, however, we do not have sufficient FTE to deliver on the goal of offering all upper-year courses annually (most upper-year courses still run in alternate years), nor as the program grows in size. Running all courses as desired and with curricular changes in mind, will require at minimum 1.0 FTE additional faculty to be hired in the near future (e.g., 2-5 years). Moreover, Health Science often has

[3] Data are solely based on HSCI-coded courses and do not include the numerous required BIOL-coded courses students take.

faculty members who are released from their teaching duties to carry out research or service work at KPU. As a result, we frequently rely on contract faculty to meet course demand. Because the Health Science program does not offer laboratory courses, we also have sufficient physical (space) capacity to offer our courses, assuming there are no scheduling issues at the institutional level.[4]

The lower-level courses within the program (e.g., HSCI 1115, HSCI 2220) tend to have wait lists but to varying degrees. With HSCI 1115, we have continued to add sections in recent years (7 sections offered in 2019/2020 and 9 sections offered in 2023/2024). When fewer sections were run per year, we often had large waitlists (e.g., 20 or more students for peak days/times). Now, with more sections for students to enroll in, we see smaller waitlists (e.g., 5-10 students for peak days/times). Since the inception of the program, we have only ever offered one section of HSCI 2220 per year. In Spring 2024, we had a full waitlist for this course and were subsequently able to offer a second section in Summer 2024 (when another course within the department was cancelled) to accommodate these students. In Spring 2025, we again had a full waitlist for this course and were able to offer a second section that filled with a strong waitlist of approximately 20 students. Without special permission from the Office of the Provost for one-time funding, we would not have been able to meet student demand. HSCI 2220 is a particularly good indicator for gauging the proportion of students intending to major in Health Science, so the enrolment of this course should be monitored closely over time to ensure demand can be met at the upper years.

At the upper years, we do not tend to have course waitlists. For example, the only required Health Science course that runs annually is HSCI 4380 Critical Evaluation where enrolment has ranged between 15 and 25 students in recent years. That said, some of the upper-year courses that run in alternate years have recently filled to capacity (which we have not seen before). For example, HSCI 3225 Nutrition had 35 students at the stable enrolment date (Fall 2024) and in Spring 2025, HSCI 4250 Health Business was also at capacity at the stable enrolment date. The Health Science program has completed a memorandum of understanding with one private institution (e.g., Alexander College) and is currently pursuing another one with a different institution (e.g., Columbia College) that will enable eligible students to transfer into the upper years of the Health Science program. If successful, we anticipate a small influx of students initially, with a larger number of transfers over time. Having students ladder into the Health Science program will likely have an impact on our capacity to meet demand, especially if fill rates increase. Regardless, leveraging opportunities such as these can help increase demand for the program over the long term.

Does the program have effective outreach to ensure demand?

The Health Science program website was re-worked based on recommendations from the most recent program review (2019-2024), however additional modifications are still needed to highlight key aspects of the program. For example, faculty profiles (including courses taught and research interests), unique program opportunities (e.g., co-operative education, honours research), and recent faculty and student successes (e.g., conference presentations, work-integrated learning) are not mentioned on the program website. Including information such as the above may help to attract the attention of prospective students and draw them to KPU. A more thorough plan for outreach (e.g., posters within high schools, social media campaigns), developed alongside the marketing team, communications team, and Future Students Office (FSO) at KPU, may also be needed. Greater reach would not only impact the potential to attract more students but also spread the word to industry and community partners. With 50% of discipline/sector survey respondents not at all or only slightly familiar with the program, there is most likely considerable room to raise awareness of the degree (Appendix E). With greater familiarity, we may be able to strengthen opportunities between KPU and these organizations, ultimately raising the profile of the program.

[4] The HSCI program is heavily reliant on BIOL laboratory courses which has space (capacity) concerns.

Faculty within Health Science consistently attend outreach events at KPU and in the surrounding community. For example, we have a regular presence at KPU Discovery Day, KPU Community day, KPU Open House, Science Rendezvous, Science Challenge, and Open Doors Open Minds, among others. Our faculty have also worked with the FSO to offer information sessions to dual-credit students (e.g., Richmond, Langley, Surrey School Districts) interested in completing HSCI 1115 while still in high school. Faculty have also partnered with FSO to host information sessions for high school students considering KPU. However, most of the recruitment that faculty have been involved in to this point has focused on domestic students, particularly within BC. Over the past five years, the Health Science program has had a lower percentage of international students compared with other programs within FoS (17% (2019/20) versus 34% (2023/24), respectively) (Appendix H). Given the potential of international students to increase fill rates and thus raise net tuition revenue for the program, it would be beneficial for the Health Science program to learn more about how KPU recruits international students. Moreover, investigating and promoting the transferability of a BSc degree from Canada to international careers may also be a useful endeavor. We recently hosted a virtual information session for the Vietnam market (April 2025) with the help of KPU International. The session was a success; thus, it would be valuable for the program to consider engaging in additional events across other key international markets.

As noted above, at the time of this writing, a memorandum of understanding has been completed with Alexander College to formalize a transfer pathway into the Health Science program at KPU (and a pathway agreement is currently being pursued with Columbia College). These institutions provide nearly all of the first two years of our program, which means that students would be able to transfer into third year (where our enrolment tends to drop off). Other opportunities to promote our program to local colleges (e.g., Douglas, Langara) that do not have a health science degree (but offer many of the same first- and second-year courses) may be helpful to students seeking further educational opportunities. Additionally, we could consider promoting the program internally to students completing an Associate of Science degree (in addition to having HSCI 1115 added as a course option to that degree to help raise awareness among students) at KPU. Further, there will be nursing intended students at KPU who are not accepted into the Bachelor of Science in Nursing program. These students will have already completed some of the Health Science program requirements, and may wish to stay at KPU and re-position themselves toward a different part of the health sector. Developing a strategy to capture these students and highlight alternate career opportunities would also be valuable for long term demand.

Recommendations

- Pursue a marketing and communications strategy that promotes the program among the general public and encourages enrolment from alternative markets (e.g., international agencies, public and private colleges), including a strategy to increase and retain the number of students at the upper years of the program.
- Explore new thematic specializations or concentrations (e.g., biomedical sciences, sociomedical sciences) to support diverse student interests and career pathways.
- Assess the feasibility of a 2-year credential (e.g., Certificate or Diploma in Health Studies, Indigenous Health, or other appropriate area) to recognize partial program completion and broaden access to applied health science education.
- Pursue the possibility of hiring at minimum 1.0 FTE faculty in the near future (e.g., 2-5 years).
- Discuss with the Faculty of Health whether a nursing-intended designation at KPU is feasible.

4. Effectiveness of Instructional Delivery

4.1. Instructional Design and Delivery of Curriculum

Are appropriate opportunities provided to help students acquire the PLOs?

The BSc in Health Science degree is a foundational program that is grounded in scientific methodology and hands-on skills. The program utilizes small class sizes to provide lab-intensive experiences where students learn, first-hand, the appropriate use of equipment and techniques to investigate living organisms and how they function. Upper-level courses, particularly the biology offerings which build upon the core knowledge and skills developed in first- and second-year, allow for the exploration of more advanced concepts and techniques. Some of the upper-year health science courses similarly build from core knowledge, yet other courses (e.g., HSCI 4140 Health and Aging, HSCI 4245 Populations and Policy, HSCI 4250 Health Business) only have the expectation of basic health-related knowledge and upper-year standing. Upper-year students generally have more opportunity to design and carry out lab experiments, field-based research, and/or community projects in collaboration with students, faculty, and other partners, enabling them to demonstrate knowledge and skills learned.

Based on the curriculum map in Chapter 2, most of the PLOs are met across multiple courses within the degree program. PLOs specific to knowledge of biology (and to some degree chemistry) and involving laboratory skills are particularly well represented. However, PLOs involving physics, health information and technologies, and research are less connected to the curriculum overall which is to be expected given that some of these are not a core part of the program. These findings are echoed among alumni, who rated the extent to which the program helped them develop certain PLOs as lower. For example, only 64% of alumni felt their ability to solve numeric problems and interpret data related to health sciences using mathematical concepts was moderately or largely developed within the program (Appendix C). Further, just 57% of alumni felt the program prepared them to a moderate or large extent to examine fundamental concepts, processes, and systems of physics. For most other PLOs, more than 75% of alumni indicated that the program contributed to their development, either to a moderate or large extent.

Current students report that the courses they take are moderately or largely supporting their ability to develop each of the PLOs. Whereas agreement was significantly high on certain outcomes (e.g., examine fundamental biological concepts, processes, and systems of the human body (91%), examine fundamental concepts, processes, and systems of chemistry (84%)), it was lower on others (e.g., critically analyze health issues by applying current knowledge and perspectives to a range of health questions (48%), prepare a personal strategy and plan for academic, career, and professional development in health science or related field (29%)) (Appendix D). The degree to which students rated the contribution of courses to their ability to develop the learning outcomes represents the structure of the current degree. As one faculty member noted, “the health science degree program is essentially a biology degree with a health science minor.” Since the degree is so heavily focused in the foundational sciences, it is not surprising that student responses reflect this, with many students agreeing that their development in these areas is strong.

Faculty, on the other hand, strongly agree that the Health Science program is helping students develop all of the PLOs to a moderate or large extent. For each outcome, agreement was equal to or greater than 69%, with several outcomes at more than 85% (Appendix F). PLOs with the lowest level of agreement related to examining “fundamental concepts, processes, and systems of physics” and developing “facility with the research techniques appropriate to effectively explore health information.” It is also important to note that there is overlap among some of the PLOs as currently written. Further, several of the PLOs are vague in their wording, which may have made it more difficult to assess the extent to which the degree is helping students develop them. As one faculty member noted “The program learning outcomes are very

vague, and their intent is not clear. There are also quite a lot of them, where some seem to be a bit repetitive and could be combined."

Are appropriate experiential learning opportunities provided to help students acquire the learning outcomes?

The Health Science program includes a strong bench science component (e.g., biology, chemistry, physics) which means that students are exposed to significant experiential learning opportunities through laboratory components and/or basic and applied research in the laboratory and/or field. Many core courses within the program include laboratory components (e.g., BIOL 1110, 1210; CHEM 1110, 1210; PHYS 1101; BIOL 2320, 2321, 2330; CHEM 2320, 2420; BIOL 3130, 3321; BIOL 4130). The senior research project courses (HSCI 4199/4299 and HSCI 4990/4995) also provide important opportunities for basic or applied research, although this set of courses is optional for students. Students who take the research courses gain significant hands-on experience that provides invaluable preparation for entry into graduate programs. Other courses within the degree provide experiential learning. For example, HSCI 3110 requires students to volunteer within a health-related organization. Several students who have taken this course end up continuing in a volunteer capacity after the course is complete which may continue to build professional identity and network connections. Other courses, (e.g., HSCI 4110, HSCI 4140) have partnered on real-world projects with community organizations. The co-operative education degree option also enables students to gain hands-on learning via paid job placements. The challenge however, is that these opportunities (e.g., HSCI 3110, course-based honours research, co-operative education) are optional within the degree program so not all students are equally exposed to experiential learning. At this point, most students are reliant on laboratory courses to engage in experiential learning. Careful consideration for how to ensure sufficient experiential learning opportunities are available within health science coded courses will be needed should the program composition change (e.g., removal of certain biology-coded lab courses).

For the most part, alumni were quite positive about the number of opportunities available to them to reinforce learning through practical application. For example, 20% of alumni somewhat agreed and more than half (53%) of respondents strongly agreed that there was sufficient opportunity to reinforce their learning through practical applications (Appendix C). Interestingly, 13% of alumni somewhat disagreed, however, none strongly disagreed. Respondents indicated their participation in a variety of work-integrated and/or community-engaged learning opportunities while at KPU. Nearly all (86%) respondents indicated their participation in lab courses. Half of alumni took part in work-integrated course projects, 43% completed applied research projects, and 21% took part in a practicum or volunteer placement. When asked to indicate the extent to which these opportunities contributed to their learning, 83% of those who completed applied research projects indicated a large extent. Similarly, 67% of those engaged in practicum or volunteer work felt it contributed a large extent to their learning. Perhaps surprisingly, only half of alumni felt lab courses contributed largely to their learning.

Findings from the student surveys also indicate a relatively high level of practical application of learning within the program. Overall, 52% and 6% of students somewhat or strongly agreed, respectively, that they have had sufficient opportunities to reinforce their learning through practical application. (Of note, 29% of students somewhat or strongly disagreed with this statement) (Appendix D). When asked to select any work-integrated or community engaged learning opportunities they participated in, nearly all students (97%) indicated participation in lab courses, where 27% indicated participation in a practicum or volunteer placement, and another 10% indicated participation in a co-operative education experience. Perhaps surprisingly, just 24% of students felt that lab courses contributed a large extent to their learning.

Faculty agree that the program prepares students for careers in health science-related fields through hands-on learning in labs (83%) and hands-on learning outside of labs (e.g., fieldwork, practicums, co-ops)

(53%) (Appendix F). However, one faculty member commented that they are unclear "what kind of work students who have graduated from this program might seek." Given the variety of graduate education and career paths available to students with a health science degree, keeping faculty up to date on the labour market and providing greater clarity as to the most current job opportunities (with and without further education) is needed. In knowing this, faculty will likely be able to better craft and align practical learning experiences that are tailored to and support the development of skills needed post-graduation. It would also likely benefit those considering different paths (e.g., public health, health administration) to have more opportunities for preparation through hands-on learning that takes place outside of laboratory settings.

Are appropriate opportunities provided to help students acquire the essential skills? [5]

The Health Science program supports individual development of each of the essential skills identified by the Ministry of Post-Secondary Education and Future Skills. These seven skills are embedded within the program and achieved through the use of learning opportunities that progressively scaffold across the degree program. Program graduates report a high level of skill development overall, as well as across each of the individual essential skills. The Ministry target is ≥85% agreement, which the Health Science program has met. Overall, the percentage of graduates reporting achievement of specific skills ranged from 88% (working effectively with others) to 100% (writing clearly and concisely, analyzing and thinking critically, and learning on your own) (Appendix H).

Responses from the student surveys support similar findings, with more than 85% of students agreeing that courses within the Health Science program have helped them develop each of the essential skills (to a small, moderate, or large extent) (Appendix D). For example, 74% of students feel the degree program has helped with developing the ability to learn on their own, 52% with analyzing and thinking critically, and 42% with reading and comprehending material appropriate to the field, to a large extent. One area where students responded slightly less positively relates to working effectively with others. For this item, 13% of current students felt the degree had not prepared them at all in this space.

Encouragingly, 100% of alumni felt the program helped them develop each of the essential skills to some extent (Appendix C). All respondents felt the program developed their ability to write clearly and concisely and speak effectively to a moderate or large extent. Similar to students, alumni also felt they were somewhat less prepared to work effectively with others. For example, 27% of alumni felt the program had prepared them to only a small extent in this area.

Faculty also reported strong agreement that the program helps students develop the essential skills to a small, moderate or large extent. Specifically, 100% of faculty felt the degree program has helped students read and comprehend material (appropriate to the field and analyze and think critically) (Appendix F). Most (94%) faculty also agreed the program has helped students write clearly and concisely, speak effectively (verbally expressing opinions or ideas clearly and concisely), and learn on their own. And 88% reported the program supports students in working effectively with others and resolving issues or other problems. This finding is particularly interesting as it conflicts somewhat with the experiences of students and alumni. It would be valuable for faculty to learn more about the reasons why these groups feel they are less prepared in this way, and seek solutions to support growth in this area for students in the program.

There are also discipline-specific essential skills that are expected of a health scientist. For example, students will ideally develop skills in the following areas: (1) technical (e.g., understanding of medical terminologies), (2) analytical (e.g., data analysis and interpretation), (3) communication (e.g.,

[5] Data reported in this section was obtained from a dashboard that is under development.

communication with diverse populations), (4) interpersonal (e.g., empathy and intercultural competence), (5) ethical and legal awareness (e.g., understanding of ethical principles in healthcare), (6) management and leadership (e.g., project management skills), and (7) research (e.g., design and conduct of research studies). Responses from student surveys indicate that these skills are being developed to a moderate or large extent within the program. For instance, between 60 and 65% of students feel technical, analytical, communication, and interpersonal skills are being developed (Appendix D). However, fewer students felt there was emphasis on ethical and legal awareness (45%), management and leadership (52%), and research (48%). Alumni felt most strongly that the program is doing a good job preparing graduates in the areas of technical (80%), analytical (73%), communication (80%), and research (80%) skills (Appendix C). However, improvement is needed in the development of management and leadership skills, where just 66% of respondents felt the program prepared them sufficiently. Generally, faculty felt the program prepares students to a moderate or large extent on all skills, with technical (76%) and analytical (78%) skills rated highest, and management and leadership (50%) rated lowest (Appendix F). Of importance to consider is the feedback from industry, where most respondents felt students were not at all or only somewhat prepared in specific areas: technical (72%), analytical, interpersonal, ethical and legal awareness, and management and leadership (86% each), research (71%), and communication (57%) (Appendix E). While these findings were based on a small sample (n=7), it is surprising that industry differs so strongly from faculty, alumni, and students.

Along these lines, we also asked students to indicate whether they preferred fewer, the same number, or more of certain course categories within the degree program to understand whether their needs are being met and appropriate skill sets achieved. One-third or more of all respondents expressed a desire to have more of the following course types offered within the degree program: research and statistics, population and public health, healthcare systems, and behavioural and social science (Appendix D). Additionally, more than 80% of students want to see more specialized electives offered (e.g., nutrition, mental health, immunology). Strategically integrating a broader range of interdisciplinary perspectives into the degree may open the door for degree specializations that ultimately better prepare students for their future career pathways. (See Section 3.3 Recommendations). There is an opportunity for the program to enhance the skill set of students to succeed in diverse careers in both the biomedical sciences and the sociomedical sciences, for example public health, health policy, epidemiology, healthcare administration, allied health and medical professions, and related fields in the contemporary health sector beyond simply achieving basic scientific literacy skills.

These sentiments are echoed by some of the respondents of the discipline / sector surveys, who highlight multiple opportunities for improvement to the curriculum. As one respondent noted, “The current curriculum has a lot of focus on the science of healthcare (e.g., anatomy and physiology) and less emphasis on the art of healthcare (e.g., relationship building, change management, cultural safety). It would be great to have a better balance … as a lot of healthcare right now is related to the art.” Another respondent noted that the clinical structures and courses of the program are robust, but “if the outcomes are to prepare students for health policy, research, management, sales and education … courses in public health, health leadership, health economics, and perhaps an elective about BC Healthcare Navigation” are needed. Further, another respondent felt the lack of stream (degree specialization) options within the program limits the ability of students to build specific / niche skillsets. There was also mention of major gaps in Indigenous understanding, particularly for those aligned toward future clinical work.

Does the program design ensure students are prepared for subsequent courses?

For several of the upper-year health science courses, in particular those that are directed more toward sociomedical content, the primary prerequisite is completion of HSCI 1115 and a specific number of university credits (e.g., 60, 90). These courses (e.g., HSCI 3110, 4110, 4245, 4250) are terminal, one-off courses where an introductory level of knowledge in addition to sufficient preparation in reading, writing,

critical thinking etc. is adequate for completion. For other health science courses where the content is more biomedical in nature, the prerequisites are quite prescriptive to ensure students have sufficient background understanding to be successful. For example, HSCI 3225 Nutrition requires prior completion of both BIOL 1110 and 1210 to ensure basic understanding of body systems and key nutrition concepts (e.g., macronutrients). Similarly, the two fourth-year anatomy and physiology courses (e.g., BIOL 4130 & 4230) each require completion of BIOL 3130 Foundations of Human Anatomy & Physiology first.

Program design challenges, particularly related to the sometimes-limited frequency in which prerequisite courses are offered, remain. For example, BIOL 3130 is offered each fall semester. If students miss this offering or fail the course, they will be set back in taking the subsequent courses for over a year. Issues like this have been problematic for student progression and timely degree completion. Additionally, achieving all of the prerequisite courses for many of the health science courses is particularly difficult for students wishing to complete a Minor in Health Science. When asked to think about the program as a whole, 65% of students and 92% of alumni somewhat or strongly agreed that the required prerequisites within the program prepared them for more advanced courses (Appendix C and D). Based on faculty surveys, more than 80% of respondents somewhat or strongly agreed that the prerequisites offered prepare students for more advanced courses (Appendix F). It will be important for the Health Science program to revisit the prerequisites and modify when appropriate to aid in timely degree completion.

Does instruction meet the needs of diverse learners?

The Health Science program includes course instruction delivered via the following modes: face-to-face classroom lectures without an experiential laboratory component, face-to-face lectures with an experiential laboratory component (e.g., anatomy and physiology), fully online, and blended face-to-face and online. Online courses or components of specific courses can be delivered either synchronously or asynchronously. Currently, the majority of health science courses are offered in a face-to-face capacity.

Diverse learning styles may be accommodated by online or blended delivery. During the early stages of the Covid-19 pandemic, all health science courses were transitioned online. Today, most courses have moved in-person and are once again being offered face-to-face. There are only a few courses running in a blended (face-to-face and online) format (e.g., HSCI 4110, 4245, 4250). Other accommodations are provided by KPU Accessibility Services, and include exam accommodations (extra time, distraction-reduced rooms, questions read out loud); course material accessibility (alternate formats such as e-text, audio, large print, or Braille); note-taking services; technology and equipment (Smart Pens, read aloud programs, screen readers, dictation programs, ergonomic chairs, large screens for computing, transcription services).

Students report a high level of agreement related to how program content is delivered. For example, most agreed or strongly agreed that instructors provide a supportive environment (78%), present the course materials effectively (74%), are up-to-date on current developments in the discipline (61%), and ensure students 'emotional and physical safety (61% and 67%, respectively) in the learning environment (Appendix D). Specific strengths related to how the program is delivered were noted as a strong focus on applied learning, passionate instructors with real-world experience, and a diverse range of teaching methods (e.g., lecture, discussion, group work) to accommodate different learning styles. Several areas for improvement were also highlighted. For instance, students suggested the inclusion of more online and hybrid learning options to accommodate students with other commitments, additional seats made available in required courses, and greater alignment of material across courses to reduce repetition.

Alumni similarly felt that instruction within the program was satisfactory. For example, 80% of alumni stated being somewhat or very satisfied with the instruction they received in the Health Science program (Appendix C). Strengths related primarily to the small class sizes and experienced faculty, and also the

programs' combination of theory and hands-on applied learning. Areas for improvement pertained more so to structural issues, for example, offering more sections of courses or having greater flexibility in modes of delivery (e.g., online, in-person).

Most faculty somewhat or strongly agreed that the instruction provided within the program meets the needs of diverse learners. For instance, 89% of faculty felt that current instructional technologies and pedagogical approaches are frequently used and that instructors ensure students 'emotional and physical safety in the learning environment (Appendix F). Additionally, 78% reported that the delivery of the curriculum is effective, and 56% felt positively that multiple learning modalities are accommodated within the classroom. Faculty are generally quite happy with the quality of instruction being offered within the program, with 74% either somewhat or very satisfied overall.

Do the assessment methods allow students to demonstrate to what extent they have achieved the learning outcomes?

Both formative and summative assessment methods are used in the Health Science program. Formative methods include draft-writing and feedback on written assignments (e.g., term papers, research reports), practice and feedback on oral presentations, and direct practical feedback during supervision of class discussions and activities. Summative assessment methods include final drafts of written materials (as above); regular quizzes (in-class or online via Moodle); traditional timed midterm and final exams (including, for example, multiple choice questions, short answer, and essay-style questions); and presentations (oral, poster, or digital/audiovisual) of original research or course topics. Generally, a stronger emphasis is placed on quizzes and exams (with other assessment types included) at the lower levels, with the upper years allowing for greater demonstration of learning via projects, papers, presentations, and discussions. These varied assessment methods enable faculty to assess student learning outcomes holistically across the duration of the program.

All of the assessment methods used in the Health Science program are clearly stated in the official course outlines. These guidelines allow faculty autonomy in terms of choice of methods for evaluation and development of assessment rubrics. In FoS, there is a shared grading scheme that standardizes letter grades (and percentages) with a qualitative description of each grade. Many faculty create rubrics for individual assignments. In addition, standardized course syllabi are provided to students at the beginning of each term that clearly outline assessment expectations and information.

Results from the student surveys suggest that more than half of students somewhat or strongly agree with each of the following statements pertaining to how learning is assessed in the program as a whole: receive clear information on how they will be evaluated (70%), range of assessments (e.g., group projects, presentations) lets them demonstrate what they have learned (73%), assessment standards are consistent throughout the program (56%), and instructors provide useful feedback (57%) (Appendix D). For alumni, most respondents somewhat or strongly agreed with the following statements pertaining to learning assessments: receive clear information on how they will be evaluated (85%), range of assessments (e.g., group projects, presentations) lets them demonstrate what they have learned (85%), assessment standards are consistent throughout the program (77%), and instructors provide useful feedback (77%) (Appendix C). Based on faculty surveys, more than 70% of respondents somewhat or strongly agree with each of the following statements related to assessment within their respective courses: students are provided clear information on how they will be evaluated (89%), the range of assessments let students demonstrate what they have learned (84%), assessment methods align with program learning outcomes (79%), and the assessment standards are consistent throughout the program (73%) (Appendix F). These findings are in large part consistent and positive, however there appears to be some room for improvement in certain areas. It may be beneficial for faculty within the program to receive additional

training related to assessment standards and feedback available through the Teaching and Learning Commons to ensure more consistency across instructors and courses. Faculty suggestions regarding assessment methods were made regarding the need to align multi-instructor courses (e.g., HSCI 1115, HSCI 2220). Sharing resources between instructors and ensuring assessments are re-worked to be more applied and real-world in nature (as opposed to exam heavy) should also be considered.

Recommendations

- Consider expanding experiential learning in core HSCI courses using high-impact practices such as simulations, case-based learning, community-engaged assignments, and structured health data projects.
- Review individual course pre-requisites to determine necessity, and modify when appropriate to aid in timely degree progression and completion.
- Embed assessment of professional skills and attitudes (e.g., teamwork, leadership, ethics, intercultural competence) into major assignments using standardized rubrics and reflective tools.
- Leverage faculty expertise (including from areas of KPU with similar learning outcomes like the Faculty of Health and Melville School of Business), interdisciplinary collaborations, and the KPU Teaching and Learning Commons to support instructional innovation and pedagogical development.
- Consider whether / how to include more online and hybrid learning options within the program to minimize barriers to student progression.

4.2. Student Success

Are students performing satisfactorily in courses? [6]

One indicator of quality instructional design is student grade distributions. To perform satisfactorily in courses (and progress to a subsequent course that requires it as a prerequisite), students need to achieve a grade of "C" or higher. Exhibit 12 and 13 in Appendix H show the cumulative grade distribution for HSCI-coded and FoS courses, respectively. Over the last five years, 90.4% of health science students were performing satisfactorily in their courses. This result is higher than that of FoS on average, where 73.8% of students achieved a grade of C or above, over the same time period. It is expected that the Health Science program has a higher number of students with passing grades given the nature of the program (e.g., students preparing to apply to allied health, health professional, or graduate education programs which typically require a GPA over 3.5 to be competitive). After an increase from 2019/2020 to 2020/2021, the overall GPA of health science students has held mostly steady. Over the last five years, the mean GPA of students enrolled in health science courses was 3.35, compared with 2.84 for FoS courses. The GPA range for the Health Science program also has less variability over time than FoS.

Where the repeat rate of courses within FoS has remained steady between 11% and 14% overall, it has fallen for health science courses from 18% (2019/2020) to 3% (2023/2024) (Appendix H). Similarly, the DFW rate for students in health science and in FoS differ, ranging from 6-10% in health science and 25-

[6] Data reported in this section was obtained from the Grade Distribution Report, which is available at DATA - Home (sharepoint.com)

29% in FoS. While health science as a discipline is rigorous, it is possible these differences are due in part to the fact that health science courses do not contain laboratory requirements.[7] Laboratory courses (e.g., biology, physics, chemistry) require a significant hands-on component along with considerable demand to use clear, well-structured detail with specific and appropriate terminology when expressing understanding of concepts. It is also worth noting that additional sections of HSCI 1115 have been offered during this period. As a lower-division course with historically strong student performance and a low failure rate, the increased enrolment in HSCI 1115 may have contributed to the observed increase in overall GPA and the reduction in DFW rates. Since the majority of HSCI-coded courses are concentrated in the third and fourth years of the program, many students entering these courses are more academically prepared, which may also explain improved performance trends at the upper level.

The performance of health science students across all levels of the program in academic year 2023/2024 is presented in Exhibit 17 in Appendix H. As would be expected, mean GPA increases over the course of the program (Year one = 3.36 to Year four = 3.56). The mean GPA of students in Year one of the program is considerably higher than the mean GPA for students in other FoS programs (3.36 versus 2.70, respectively). While the average GPA in health science starts higher in Year one, the Year four mean GPA aligns much more closely with students in FoS (3.56 and 3.54, respectively). Similar trends can be observed for repeat rates and DFW rates, where Year one is lower for health science students but remains on par at year four when these values level off for other programs in FoS. These data should be interpreted with caution given that there are only two lower year courses within health science (HSCI 1115 and HSCI 2220), thus essentially reflecting individual course difficulty as opposed to an accumulation of multiple courses.

Are students making satisfactory progress in the program? [8]

Most students feel that the required prerequisites prepare them for more advanced courses, however, the ability to take these courses when needed is not always possible. For instance, only 13% and 6% of students somewhat or strongly agreed, respectively, that they were able to take courses when needed (Appendix D). What is troubling is that 48% of students strongly disagreed with this statement, indicating a significant percentage of students struggling to progress through the program in a timely manner. Thus, nearly 74% of students have been unable to take a course when needed. When asked to provide course names, students frequently cited issues taking HSCI-coded courses (e.g., HSCI 2220, 3225, 4170, 4380). Students pointed to the infrequent offering of upper-year health science electives within the program as particularly problematic. Other key biology courses, for instance those offered in the second- and third-year of the Health Science program (e.g., BIOL 2320, 2321, 3180) were also mentioned (NOTE: This may be due to poor student planning as opposed to actual progression concerns). Similarly, less than half of alumni reported somewhat or strongly agreeing with the following statements: I was able to take the prerequisite courses when I needed them (43%) and The range of HSCI coded courses offered each term was adequate (43%) (Appendix C). These challenges are likely compounded by the fact that most third- and fourth-year courses are still run in alternate years. It is very possible that the limited availability of courses offered is a factor in students taking longer than four years to complete the Health Science degree program. Careful planning should occur to balance the frequency of course offerings so that class sizes remain large enough to avoid being cancelled.

Although there will understandably be variation in the number of students who graduate year on year, the Health Science program has generally showed an upward trend over time and is also contributing an increasingly larger percentage of overall FoS baccalaureate degree graduates. In academic year 2019/2020, six health science students graduated with a baccalaureate degree. By 2023/2024, the number of students graduating with a baccalaureate degree increased to 24. In FoS, there were a total of

[7] HSCI students take a significant number of BIOL-coded lab courses (e.g., BIOL 3130) that are not reflected in this data.

[8] Data reported in this section was obtained from the Credentials Report, which is available at DATA - Home (sharepoint.com)

39 (2019/2020) and 53 (2023/2024) students graduating with baccalaureate degrees in those same years. Overall, this means that health science students accounted for 15% (6 out of 39) (2019/2020) and 45% (24 out of 53) (2023/2024) of baccalaureate degree graduates (Appendix H).

Are graduates of the program successful?

The Health Science program is designed to support direct entry into the workforce and to serve as the educational prerequisites for students wishing to pursue further education in allied health, health professional, or graduate programs. Given this, it makes sense that we see both pathways reflected in Exhibit 20 in Appendix H. Of 16 respondents, the unemployment rate between 2020 and 2023 is higher (12.5%) for health science graduates than the Ministry target of ≤7.5%. This is less than ideal, yet perhaps to some degree explainable given the uncertainty that was occurring during the Covid-19 pandemic, particularly within the health sector across these years. It is possible that individuals with a health science background and no interest in clinical work, were less keen to be employed directly within the health system. Regardless, we do see that over two-thirds of graduates (71%) with current employment are working in occupations that they describe as 'somewhat' or 'very' related to their studies.

Seven out of fourteen alumni survey respondents indicate current employment in a field related to health science (with the remaining students currently or recently engaged in post-graduate education). Of students employed, 71% found work within one year of graduation and 58% were employed in a regular position (the remaining graduates were working in contract or casual positions) (Appendix C). Alumni reported working in a wide variety of roles including: medical sales associate, education coordinator, laboratory assistant and pharmacist with organizations such as Vancouver Coastal Health, Fraser Health and LifeLabs. In addition to survey respondents, we are aware of alumni who are working as: Research Assistants (Applied Genomics Center at KPU, Headlands Research), Medical Office Assistant (Back & Body Wellness Centre), Diet Technician (Vancouver Coastal Health), Pharmacy Technician (Shoppers Drug Mart), Caregiver (Ministry of Children and Family Development), Diagnostic Medical Sonographer (Interior Health Authority), and Youth Mental Health Worker (Options Community Services), among others.

Because the degree is broad-based, we have found that many students are unaware of the vast number of career paths available to them. Developing more fulsome and targeted career-focused opportunities (e.g., co-curricular) that span the duration of the program may be key to helping students obtain greater clarity related to future employment pathways. Students should be exposed to a variety of possible career options, clinical and non-clinical, throughout their time at KPU to see where their long-term interests lie. Given that the BC Labour projections indicate a significant increase in job openings related to both health care and social assistance, along with professional, scientific, and technical sectors, there is considerable opportunity to better support program graduates interested in moving to health-related positions that do not involve direct patient care (and thus further education) immediately upon departure from KPU.

Recommendations

- Explore a Health Science Career Development Program that includes guest panels, mentorships, volunteer tracking, skills workshops, and a co-curricular record framework to build career clarity, improve sector engagement, and reduce unemployment.

5. Resources, Services, and Facilities

Does the program have the library and learning resources needed to deliver the curriculum?

There are numerous library and learning resources available to health science students, ranging from audio-visual equipment to study guides. Most students report being neutral or positive toward the services available, however a considerable percentage have never used multiple resources during their time at KPU. For example, while 38% of students are either somewhat or very satisfied with the availability of audio-visual equipment, another 38% have not used this resource (Appendix D). Similarly, 20% are satisfied with the study guides that are available to them, however 28% have never used them. There is also particularly low uptake of DVD or streaming videos on program-related topics (48% have never used), however, this may not be a relevant learning modality for our students. The Health Science program should also consider establishing a stronger connection to the health science librarian to ensure consistency for students upon entering the program. From the student survey, 25% of students report having never had a library orientation (even though this is included as part of the required BIOL 1210 lab) and 38% have never accessed librarian support for program-related research. Given the nature of the program and how much of it focuses on individual research or term papers, along with group projects, it would significantly benefit students to be connected with a librarian much earlier in their degree program (e.g., HSCI 1115). Faculty surveys echo much the same, where most people indicate that the library resources are meeting the program's needs very well or extremely well. Of primary importance are online resources (e.g., journal articles), with 70% of faculty indicating that these resources are meeting the needs of the program (Appendix F). Of note, the KPU library lists 20 health science databases, where other institutions list more (e.g., SFU has 46 health science databases). There are however, a considerable percentage of faculty who have not engaged with certain materials. For example, 59% have not used DVDs or streaming video on program-related topics, 41% have not used print periodicals, and 35% have not used audio-visual equipment, study guides, or library orientation. One area that the program may want to consider exploring is the potential use of Open Educational Resources (OER) in key courses. To date, OER is used sporadically in a handful of upper-year courses.

Does the program have the specialized technology needed to deliver the curriculum?

Health Science courses do not currently rely on specialized technology; however, the program includes numerous biology courses which require equipment to deliver the core curriculum. For example, Health Science students take BIOL 3130 and BIOL 4130 (Anatomy and Physiology), both of which include the use of specialized equipment and technology (e.g., laptop computers, ADI PowerLabs). This type of equipment will need to be monitored for lifespan and replaced accordingly. Additionally, for students enrolled in senior-level research courses, access to equipment and technology, as needed, is often supported through partnerships with other units, such as: biology, which provides access to laboratory equipment and instrumentation when relevant to student projects; the AGC, which has supported research requiring specialized molecular or bioinformatics tools. In addition, access to statistical analysis software such as SPSS and NVivo is provided through institutional licenses managed by the Teaching and Learning Commons or IT. Although this question was not asked in the student survey, it may be useful to consider whether additional specialized tools should be integrated into the curriculum in the future. For example:

- Data visualization platforms, health analytics tools, or public health informatics software could enhance instruction in courses related to epidemiology, health systems, or research methods.

- Simulation software or interactive case-based learning environments could support more applied learning experiences (e.g., aging simulator).

While current technology meets existing instructional needs, potential curriculum revisions may warrant a more proactive assessment of future technology requirements to ensure continued alignment with both pedagogical goals and sector expectations. For example, if curriculum changes include content aligned with emerging health sector trends such as digital health, artificial intelligence, or big data in health, additional instructional technologies may be required.

Does the program have the facilities needed to deliver the curriculum?

One of the most important resources of the program is the lab-based courses (e.g., biology, chemistry) and accompanying facilities which provide students with rich scientific experiences. Generally, students report a high level of satisfaction related to the facilities available (e.g., classroom space, laboratory space, computer space) to them. Most students are somewhat (47%) or very (23%) satisfied with the classroom spaces they learn in. Similarly, 50% of students are somewhat satisfied and 27% are very satisfied with the laboratory spaces available. Nearly 37% of students also report satisfaction with the computer spaces at KPU, however, an additional 30% have not used these spaces (Appendix D). Amongst faculty, there is general agreement that the classroom and laboratory spaces available are sufficient to deliver the curriculum. Of note, the space itself is good, but faculty require more of it (e.g., it is difficult to secure classrooms on peak teaching days and times which can require changes to scheduling, mode of delivery, etc.). Nearly 90% of faculty feel both classroom and laboratory spaces meet the program's needs somewhat, very, or extremely well. However, just 36% feel the same for computer space (Appendix F). The Health Science program is limited in its access to computer spaces. Outside of the regular library computers, there is no dedicated computer lab for science students at KPU. A positive for the program is that there are facilities available to offer the entire first two years of the degree on the Surrey and Richmond campuses. We have recently been exploring the possibility of doing the same on the Langley campus.

Does the program have the other support services needed to deliver the curriculum?

Students are particularly satisfied with the availability of required texts at the KPU bookstore (72% are somewhat or very satisfied). Satisfaction wanes a bit with the other resources where 42% (advising services), 31% (career services), 21% (accessibility services), 27% (counselling services), and 42% (peer tutoring services) of students were somewhat or very satisfied (Appendix D). Two primary areas of concern relate to advising services and career services, where 14% and 34% of students, respectively, have not used these supports. Health science students often take courses out of sequence so it would be beneficial to have all students connected to advising as early as possible within their degree program, ideally right after declaration. We have recently changed the declaration requirements to allow students to state their intention much earlier, which should help foster a stronger connection to degree advisors. Additionally, many health science students remain unclear as to what career paths are available to them, even toward the end of their degree program. It would benefit students for the program to work alongside career services to highlight their supports and persuade students to reach out.

Faculty overwhelmingly agree that accessibility services are meeting the programs needs very (56%) or extremely (28%) well, with 100% of faculty having used these supports in the past (Appendix F). There is strong support for the availability of required texts at the KPU bookstore, advising services, and peer tutoring services as well. Similar to student surveys, a significant percentage of faculty (50%) have not used or don't know whether career services are meeting the program's needs. As one faculty member notes, "KPU students have access to rich resources outside the classroom but these are underutilized. For example, students could learn how to study independently, make plans with advising, etc." In essence, the support services appear to be available, including career services, but connecting students to them and helping them understand how to access what they need could be improved.

Areas for improvement were noted as more learning centre hours and greater access to academic advisors (e.g., particularly those attached to FoS), stronger connection between central advising and degree advisors, less expensive textbooks (e.g., zero-cost or low-cost textbooks), dedicated health science work/study space to foster connections, and keeping the program website updated.

Recommendations

- Determine whether and if so, how/ when to incorporate a library orientation into the program for HSCI students to facilitate a stronger connection to the HSCI librarian.
- Evaluate potential technology needs against current / future industry trends, particularly in health analytics, telehealth, and simulation-based learning; advocate for targeted investment in health-specific instructional technologies and/or explore funding or shared infrastructure with related departments.
- Assess the availability of dedicated HSCI instructional and student support resources, including classroom space, career development practitioners, and advising capacity, especially as course offerings expand.
- Explore additional support for co-operative education and community placement coordination, which will be critical to sustaining experiential learning across an expanded health curriculum.
- Explore whether to pursue the inclusion of more zero-cost or low-cost textbooks within courses across the Health Science program.

6. Conclusions and Recommendations

6.1. Summary of Program's strengths, weaknesses, opportunities, and challenges

STRENGTHS

- Interdisciplinary Curriculum: Integrates foundational science content with applied health science content, offering a broad, flexible degree that is relevant to multiple health-related fields.
- Excellent Basic Science Foundation: Emphasizes biology, chemistry, physics and laboratory-based learning that equips students with solid scientific knowledge and practical skills.
- Undergraduate Research Opportunities: Students in both the BSc in Health Science and the BSc (Honours) in Health Science degree programs engage in applied research projects under one-to-one faculty supervision.
- Strong Faculty Expertise: Faculty have a range of expertise and many are research-active, with deep connections to industry, enabling hands-on training and experiential learning opportunities.
- Student-Centered Instruction: Emphasis is on small class sizes, individualized learning and support, and applied assessments that foster critical thinking and communication skills.

WEAKNESSES

- Curriculum Structure: Disproportionate number of biology-coded courses and content compared to health science courses, particularly in the upper-years of the program, which creates misalignment with the program's overall identity.
- Availability of HSCI-coded courses: Limited offerings of health science courses in the early years (e.g., HSCI 1115 and HSCI 2220) may reduce student engagement and contribute to attrition.
- Assessment Framework: No comprehensive system to assess knowledge, skills, and attitudes at the program level; gaps in outcome scaffolding and alignment.
- Program Learning Outcomes: Excessive and overlapping program learning outcomes include redundancy and vague language, making mapping and assessment difficult.
- Sector Engagement: Industry and community interaction occurs mostly through optional or elective components rather than core programming, resulting in inconsistent sector engagement.
- Research Capacity: Ability of faculty to take on and support research students is limited, which means opportunities to engage in research projects are not possible for all students.

OPPORTUNITIES

- Renew Curriculum: Revise and streamline PLOs, scaffold skill development, and introduce and/or align content more clearly across years and between core/elective offerings.

- Integrate Career Pathways: Identify and embed career-specific content, including sector-aligned competencies (e.g., policy analysis, data literacy, health communication) and soft skills.

- Develop Career Readiness: Develop a Health Science Career Development Program (e.g., co-curricular program) or embedded initiative to support career exploration, skill development, and industry networking.

- Introduce Specializations or Credentials: Explore options for specializations (e.g., biomedical, sociomedical) or shorter credentials to support program flexibility and student goals.

- Expand Applied and Digital Learning: Incorporate emerging tools in health data, artificial intelligence, and telehealth to align with evolving sector needs.

CHALLENGES

- Program Identity and Market Positioning: Perceived overlap with a biology degree may create confusion for students and external stakeholders about the program's distinct value.

- Graduate Readiness and Sector Alignment: While many students perform well academically, there is variation in their preparedness for workforce entry, particularly in non-clinical roles.

- Student Retention and Engagement: The limited in scope health-content available across the early part of the degree may impact retention and thus enrolment in upper-year courses.

- Sustainable Course Delivery and Scheduling: Reliance on alternate-year offerings of electives creates pressure on course planning and student progression.

6.2. Recommendations

The following table presents the recommendations resulting from the program self-study.

Curriculum Review

- Undertake a comprehensive curriculum mapping and scaffolding initiative to align course learning outcomes (CLOs) with revised program learning outcomes (PLOs), addressing redundancy, misalignment, and missing competencies.
- Reduce the total number of PLOs to fewer than twelve and ensure they reflect a balance of knowledge, skills, and attitudes, including emerging domains such as equity, digital literacy, and career readiness.
- Revise the distribution of HSCI-coded courses and content, particularly in Years 2 and 3, to improve program cohesion and identity. Develop a set of core HSCI-coded courses at each year of the program, potentially focused on health systems, public health, or applied health science skills
- Align curriculum with high-demand employment sectors by mapping core competencies and skills to career clusters such as (1) clinical and allied health, (2) research and academia, (3) population and public health, (4) health administration and management, and (5) biotechnology and pharmaceuticals.

Program Relevance and Student Demand

- Investigate expanding co-operative education, practicum and/or research placements in collaboration with employers and professional organizations, including Fraser Health, BCCDC, and local community partners.
- Maintain communication channels with relevant bodies (e.g., PAC, alumni) to determine graduate outcomes and understand the evolving workforce expectations.
- Consult with relevant groups (e.g., KPU Indigenous Advisory Committee and Elder-in-Residence, First Nations Health Authority, KPU Teaching and Learning Commons) regarding strategies to decolonize and Indigenize the curriculum.
- Continue to integrate content and assessments that reflect real-world health challenges and sector trends, such as chronic disease prevention, aging populations, and culturally safe care.
- Assess whether the physics and/or math content of the program should be modified to more accurately reflect the needs of the health science field.
- Continue to seek additional hiring opportunities to match program growth, ensuring that future candidates have both academic and practical experience in the field of health science.
- Explore the possibility of providing protected time for faculty that actively engage in research that includes and supports the development of students.

- Pursue a marketing and communications strategy that promotes the program among the general public and encourages enrolment from alternative markets (e.g., international agencies, public and private colleges), including a strategy to increase and retain the number of students at the upper years of the program.

- Explore new thematic specializations or concentrations (e.g., biomedical sciences, sociomedical sciences) to support diverse student interests and career pathways.

- Assess the feasibility of a 2-year credential (e.g., Certificate or Diploma in Health Studies, Indigenous Health, or other appropriate area) to recognize partial program completion and broaden access to applied health education.

- Pursue the possibility of hiring at minimum 1.0 FTE faculty in the near future (e.g., 2-5 years).

- Discuss with the Faculty of Health whether a nursing-intended designation at KPU is feasible.

Effectiveness of Instructional Delivery

- Consider expanding experiential learning in core HSCI courses using high-impact practices such as simulations, case-based learning, community-engaged assignments, and structured health data projects.

- Review individual course pre-requisites to determine necessity, and modify when appropriate to aid in timely degree progression and completion.

- Embed assessment of professional skills and attitudes (e.g., teamwork, leadership, ethics, intercultural competence) into major assignments using standardized rubrics and reflective tools.

- Leverage faculty expertise (including from areas of KPU with similar learning outcomes like the Faculty of Health and Melville School of Business), interdisciplinary collaborations, and the KPU Teaching and Learning Commons to support instructional innovation and pedagogical development.

- Consider whether / how to include more online and hybrid learning options within the program to minimize barriers to student progression.

- Explore a Health Science Career Development Program that includes guest panels, mentorships, volunteer tracking, skills workshops, and a co-curricular record framework to build career clarity, improve sector engagement, and reduce unemployment.

Resources, Services and Facilities

- Determine whether and if so, how/ when to incorporate a library orientation into the program for HSCI students to facilitate a stronger connection to the HSCI librarian.

- Evaluate potential technology needs against current / future industry trends, particularly in health analytics, telehealth, and simulation-based learning; advocate for targeted investment in health-specific instructional technologies and/or explore funding or shared infrastructure with related departments.

- Assess the availability of dedicated HSCI instructional and student support resources, including classroom space, career development practitioners, and advising capacity, especially as course offerings expand.
- Explore additional support for co-operative education and community placement coordination, which will be critical to sustaining experiential learning across an expanded health curriculum.
- Explore whether to pursue the inclusion of more zero-cost or low-cost textbooks within courses across the Health Science program.

7. Appendices

Appendices are provided in separate document.