### Human Biology – Global Health

#### 2 Major Program Modifications (Significant Alterations to Existing Program Component)

**Global Health Major**

<table>
<thead>
<tr>
<th>Start Session:</th>
<th>Summer 2017</th>
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<tr>
<th>Current Calendar Description:</th>
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<tr>
<th>New Calendar Description:</th>
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**HMB: Global Health**

The objective of the HMB: Global Health program is to provide students with instruction in fundamental biological sciences and to integrate a broad understanding of the socio-economic and cultural determinants of health to populations around the world.

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<tr>
<th>Current Admission Requirements:</th>
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No changes

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<th>Current Enrolment Requirements:</th>
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This is a Type 1 open enrolment program. Students are permitted to enrol in the major during the program enrolment cycle as soon as they have earned 4.0 FCE. It is recommended students complete their first year life science requirements before entering the major program.

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<thead>
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No changes

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<th>Current Completion Requirements:</th>
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**Required Courses (8.0 FCE)**

**First Year Life Science**

1. BIO120H1, BIO130H1
2. (CHM135H1, CHM136H1) / (CHM138H1, CHM139H1) / CHM151Y1 *(transfer credits will be accepted in lieu of the chemistry requirements only if they carry a direct exclusion to a pre-approved chemistry course)*
3. MAT135H1 / MAT136H1 / PHY131H1 / PSY100H1 *(transfer credits from AP and IB Psychology are not accepted)*

**Year 2: Foundations in global health**

4. HMB203H1
5. BCH210H1 / CHM247H1
6. BIO230H1 / BIO255H1, BIO220H1
7. HMB265H1 / BIO260H1

**Year 3: Selected topics in global health**
### New Completion Requirements:

**Required Courses (8.0 FCE, including at least 0.5 FCE at the 400-level)**

**Chemical and Physical Foundations of Biological Systems**
1. (CHM135H1, CHM136H1) / (CHM138H1, CHM139H1) / CHM151Y1
   *Transfer credits will be accepted in lieu of the chemistry requirements only if they carry a direct exclusion or equivalency to a pre-approved chemistry course.*
2. MAT135H1 / PHY131H1 / PHY151H1

**Biological Foundations of Living Systems**
3. BO120H1, BIO130H1
4. BIO230H1 / BIO255H1
5. HMB265H1 / BIO260H1
6. PSL300H1, PSL301H1
7. 1.0 FCE from HMB302H1 / HMB322H1 / ANA300Y1 / ANA301H1 / CSB351Y1 / IMM340H1 / IMM350H1 / MGY377H1 / MGY378H1

**Global Health Concentration Courses**
8. 0.5 FCE from: PHS100H1 / PSY100H1 / ABS201Y1 / ANT100Y1 / SOC101Y1 / ECO100Y1
   *Transfer credits from AP and IB psychology are not accepted.*
9. HMB203H1
10. 0.5 FCE from courses on the biological dimensions of Global Health: HAJ453H1 / HMB323H1 / HMB342H1 / HMB433H1 / HMB436H1 / HMB443H1 / HMB443H1 / HMB448H1 / HMB496Y* / HMB499Y1* / CSB351Y1 / EEB325H1 / EHJ352H1 / HST373H1 / MGY350H1 / MGY377H1 / MGY378H1 / MIJ485H1
11. 0.5 FCE from courses on the social and ecological dimensions of Global Health: HMB303H1 / HMB306H1 / HMB406H1 / ABS240Y1 / ABS250Y1 / ABS350H1 / ABS355H1 / ANT345H1 / ANT348H1 / ANT358H1 / ANT458H1 / ANT460H1 / BIO220H1 / EEB428H1 / ENV341H1 / ENV430H1 / ENV432H1 / GGR433H1 / GGR434H1 / JEH455H1 / ECO314H1 / HST410H1 / HST440H1 / HST464H1 / JNH350H1 / NEW352H1 / NEW353H1 / NEW453H1 / NFS490H1 / PHS300H1 / PSY320H1 / PSY321H1 / ECO324H1 / ECO333H1 / ECO334H1 / ECO342H1 / ECO369H1 / ECO402H1

**Data Analysis Courses**
12. 0.5 FCE in statistics: HMB325H1 / STA220H1 / STA288H1 / PSY201H1
A research project from a different unit may be accepted with prior written approval from Human Biology if the course is not counting toward a different program.

Global Health Major Notes:

1. Courses can only count toward one requirement, even if listed as options to multiple requisites of the program.
2. Not all courses listed have priority enrolment for Global Health majors. Students are responsible for checking priority of courses and meeting course prerequisites for courses they wish to take.
3. The Global Health major cannot be paired with any other Human Biology Program managed major program.

Academic Context:

Global Health encompasses the field of studies focus on health systems in the human body, and social and cultural constructs affecting human and human health. The Global health program in the Faculty of Arts & Science exists to provide students with a firm foundation in human biology and introduce them to the field of public health though courses offered through the collaborative program in Human Biology and other courses offered within the Faculty of Arts & Science.

The Global Health major program has been revised to emphasize fundamental concepts in human biology. The program takes an interdisciplinary approach that integrates genetics, physiology, and psychology through courses in HMB as well as courses that are offered through other departments and programs.

Students graduating with a major in the Global Health major program will be able to communicate effectively with the public, NGOs, private sector, and government on the basic principles of health and disease and issues surrounding its societal implications. Students will also be able to specialize by pursuing research through graduate studies, further training as health care professionals, or pursuing advanced degrees in social work, public policy, business, or law.

Learning Outcomes:

Students enter the program at the end of their first year after establishing a foundation in organic biology and chemistry as well as physical chemistry. Students will build on this foundation with foundational courses (HMB203H1, HMB265H1, BIO230H1, , PSL300H1, and PSL301H1, and a social introductory course of their choosing: PHS100H1/GGR112H1/PSY100H1/ABS201Y1/ANT100Y1/SOC101Y1/ECO100Y1/SOC102H1) that are designed to provide a broad overview of their respective subject areas, all of which supply the foundation to the study of human biology and global health. Students will also learn quantitative analysis skills in a statistics course, which will become immediately applied to a higher-year lab course or research based course in which students will learn lab skills and/or research skills relevant to further studies in health and disease and cellular molecular biology.

As students progress through their studies, they will take a series of core global health concentration courses that will cover a wide range of topics relevant to studies in global health including: epidemiology (HMB342H1/ HST373H1) topics related to global health research (HMB323H1), and higher-year course of the students choosing relating to global health (all of which have heavy critical analysis components surrounding current primary research and feature assessments such as grant proposals and literature reviews). These courses focus on particular aspects of global health and build on knowledge gains in foundational courses and work to present to students a comprehensive analysis of human health and social systems.

Specific learning outcomes:

By the end of this program, students will be able to:
1. Demonstrate an understanding of the fundamental concepts in global health and how these concepts are applied.
2. Identify and analyze data from global health research from the primary literature.
3. Understand appropriate quantitative techniques needed to examine global health related techniques.
4. Write and speak effectively about global health issues in both scientific and broader audiences.

As Global Health did not go under major modifications in 2015, these outcomes are new for the program. However, it should be noted that they are similar and in line with the learning outcomes for all of the other HMB programs, which did go under major modification in 2015 and were approved with learning outcomes aligned with the above indicated specific learning outcomes.

The Human Biology Program thinks it is important that all of our programs are advanced and progress to better reflect the changing scientific landscape so that our students are prepared to enter their chosen field either as an academic or a professional, and as such the objectives as outlined in the below questions regarding learning objectives are in line with the other HMB programs.

Depth of Knowledge:

Introductory courses are designed to expose students to fundamental concepts in genetics (HMB265H1/BIO260H1),
knowledge base in these areas from which students will build. Students are then introduced to more advanced health and disease courses that highlight anatomy and physiology (ANA300Y1, PSL300H1, PSL301H1), histology (HMB302H1), and social constructs affecting human health and development (PHS100H1/PSY100H1/ABS201Y1/ANT100Y1/SOC101Y1/ECO100Y1). Further depth in these subjects is available in courses that focus on environmental impacts of health (JEH455H1), global health policy (HMB303H1), or principles of heavy metals in the body (HMB437H1).

**Critical and Creative Thinking:**
Students engage in critical thinking early on in the program. For example, in HMB265H1 there are assignments and tests that focus on the application of course concepts and information through problem-based learning, whereas written assignments and oral presentations are based on the synthesis and critical analysis of information and techniques from both primary and review articles. As with all life science programs, the integration of primary research findings into all of our courses, but especially in 300- and 400-level courses, is a critical component of the student learning experience. Students are taught how to interpret and critically analyze research as well as develop the skills in synthesizing information from multiple sources. The program also uses creative ways to facilitate reflective thinking. For example, HMB443H1 integrates community engaged learning as a primary method for teaching students about micronutrient deficiencies and food security.

**Information Literacy:**
Students learn effective written and oral strategies for communicating their analyses and critiques. For example, seminar courses often require students to be creative and persuasive in developing research grant proposals in translational medicine (HMB402H1). Team-based learning and peer evaluations, either in class or online, are also integrated in several different courses, such as HMB302H1 where students work in pairs or small groups where students engage in peer learning and evaluation. Seminar presentations or poster presentations are common among most advanced courses and this enables students to develop key skills in explaining, discussing, critically analyzing and synthesizing research findings in an oral presentation format. Students also have opportunities to cultivate an ability to interact and debate issues in a group setting with guest speakers that are experts in their fields, preparing them with communication skills that will be useful in a professional workplace.

In order to complete written and oral assignments, students are required to learn to use Internet based search engines (e.g. PubMed, Google Scholar, Ensembl, Allen Brain Atlas, etc.) to acquire relevant information from the primary literature, and genome and gene expression databases. In HMB302H1, students engage in peer teaching and evaluation facilitated by social media and access to an online image database. Students are typically evaluated on their effective gathering and use of this information through enhanced citations, and the ability to use PowerPoint, Keynote, blogs and other presentation formats.

**Quantitative Reasoning:**
While many courses will integrate quantitative analysis and reasoning, such as genetic mapping (HMB265H1), or statistically analyzing health data (HMB342H1), the program also requires that students take basic statistics courses (HMB325H1/STA220H1/STA288H1/PSY201H1) that will serve as a foundation for understanding concepts and analyzing research in other courses.

**Social and Ethical Responsibility:**
Several courses will introduce students to some of the bioethical, social and health policy issues and controversies surrounding specific topics in health and disease, such as AIDS (JNH350H1, HAJ453H1), and dementia (HMB440H1). The overall objective is to challenge students to think about the benefits of health and disease research, and the limits of these benefits, on society, including medicine, law and biotechnology.

**An Integrative, Inquiry Based Activity:**
Seminar courses at the 400-level provide a major opportunity for students to integrate knowledge from across a spectrum of health and disease related courses. Students in the major program are encouraged to complete a full-year research project course or a summer research project course (HMB496Y1/HMB499Y1), although this is not a requirement. Students will typically identify suitable supervisors in hospital research institutes or campus-based laboratories and research groups. Research project course oversight includes a HMB faculty advisor facilitates the placements, guide workshops on research presentation skills or apply statistical analyses (in collaboration with Department of Statistical Sciences), as well as organize research presentation days (with research faculty to serving as assessors). Students gain invaluable first-hand experience integrating their knowledge of health and disease and other related subjects, learn to apply their quantitative reasoning and analytical skills, practice effective communication and team-based learning, and learn about ethical standards in research.
Program Delivery:

**Method:** In Class; Online

**Mode:** Full Time; Part Time

**Brief Description of the Proposal:**
Modification of how the Calendar listing is organized, for better clarity of program requirements. The total number of FCE required remains the same, and courses allowed for the program at the higher levels has been reviewed and revised to better reflect courses that are directly related to the study of global health. Some new requirements are added, and some old requirements are deleted or merged with other requirements to accommodate the 8.0 FCE cap on major programs.

**Details of Proposed Change:**
0.5 FCE of statistics is now required (HMB325H1/STA220H1/STA288H1/PSY201H1).
BCH210H1/CHM247H1 is no longer required to allow space within the 8.0 FCE cap for a statistics course to be required, as statistics is instrumental to the study of Global Health as seen in epidemiology and the assessment and analysis of quantitative data.
1.0 FCE from courses focusing on human structure is now required HMB302H1/HMB322H1/ANA300Y1/ANA301H1/CSB351Y1/IMM340H1/IMM350H1/MGY377H1/MGY378H1 as both structure and function are important to the study of human biology, and global health students encounter both in higher years of undergraduate study as well as graduate study and professional work in the global health field.

0.5 FCE from a social-aspect course is now required: PHS100H1/PSY100H1/ABS201Y1/ANT100Y1/SOC101Y1/ECO100Y1.
BIO220H1 is no longer required to allow space within the 8.0 FCE cap for the requisite of an introductory course from a social-aspect point of view which students need to satisfy their higher level of 0.5 FCE from courses on the social dimensions of Global Health; resolving hidden pre-requisite concern. However, it is allowed for the program under Requisite line 11: courses on the social and ecological dimensions of Global Health."
The number of Global Health relevant courses has been adjusted to ensure students take at least 0.5 FCE of higher-year sciences courses pertaining to Global Health and at least 0.5 FCE of higher-year social courses pertaining to Global Health, but to also allow for a full 1.0 FCE of structure courses to be required (the full 1.0 FCE of function-PSL300H1 and PSL301H1 remain required).

**Rationale:**
The Human Biology Program completed a self-study in March 2014 that the program and the Faculty of Arts & Science has been steadily working on the recommendations to enhance the overall quality of the program. Many of the recommendations have already been put into effect: our smallest program (Health Care Ethics major) has been closed for further admissions and a proposal to formally close the program will be put forward in October 2017, we have signed a MOA giving the School of the Environment full ownership of the Environment and Health major and specialist (ASMAJ0365 and ASSPE0365) and have agreed to continue teaching and supporting the capstone requirement course for the specialist program: JEH455H1 (Topics in Environment & Health) and giving Environment and Health students enrolment priority in a number of our courses.
One of the first acts was a revision of the Health & Disease (ASMAJ2013 & ASSPE2013), Neuroscience (ASMAJ1472 and ASSPE1472), and our then-Genes, Genetics, and Biotechnology, now Fundamental Genetics and its Applications program (ASMAJ1050 and ASSPE1050), and Human Biology (ASMAJ2035) programs to better align the programs with the teaching strengths of the unit, the resources of the unit, and the course offerings within the Faculty of Arts & Science. These modifications came into effect in 2015-2016.
This realignment of four of our five programs has benefited the program as a whole and our students greatly, and have allowed us to see more clearly where there are gaps in the program structure and program objectives, as well as allowing us to see how to better align the programs with their objectives, as outlined in 2015. Since then, we have consulted with the Dalla Lana School of Public Health on pedagogy revisions for our Global Health major and Specialist (ASMAJ25757 and ASSPE2575), and have consulted with our faculty and staff to better assess pedagogy gaps and inconsistencies in program structure and pressure points within our programs in terms of enrollment and student outcomes. Many of the gaps/ misalignment were due to lack of lab space, staff, support, or lack of faculty to teach core courses.
Even in the 2015 major modification proposal, it was outlined that HMB has been working closely with [the Cell Systems and Biology Department], [the Department of Ecology and Evolutionary Biology] and the [Faculty of Arts &
labs. However, at the time of the proposal, the labs were not yet constructed. Construction began in spring 2015 and are currently nearing completion. HMB teaching labs will be ready for full-time use by September 2017. As such, we wish to utilize these labs in our HMB courses to better meet listed course objectives for the benefit of our students. Since many of the recommendations from the external review have been met, and now that HMB has more staff support including 2 lab technicians, a more clear vision, our own teaching labs (which will allow us to use the space more frequently), and have been approved to hire an appointed faculty member starting in July 2017 (the search is currently ongoing) who will allow us to offer more course sections of some of our courses without overburdening teaching assignments, we would like to make further revisions to better meet objectives outlined in 2014.

The proposed restructuring of all of our programs is the next step in further defining improvements and innovations first initiated in 2015-2016. The Global Health programs did not go under major modification in 2015, but it is important to HMB that as we are revising and modifying our other programs to better clarify the program purposes as outlined in 2015, that all HMB programs are reviewed and assessed and given due diligence to ensure that our program offerings are clear and consistent with their views and broader outcomes from a pedagogical holistic view.

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<tr>
<th>Impact that the proposal may have on students or other academic units/divisions:</th>
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<tr>
<td>Currently there are 218 students enrolled in the Global Health major, with a two year average of total enrolment being 214. We do anticipate enrolment to increase slightly due to the clarity of the programs expectations, but we do not anticipate growth by more than 10%. If we do experience growth by more, we may need to assess the programs Type 1 status to ensure we have sufficient space in our Global Health courses, but currently this is not a concern, and thus there will be minimal impact on other life science program enrolment. Impact on our unit will also not increase as we have increased staff support.</td>
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<th>Consultation:</th>
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<td>Director Dr. Melanie Woodin has consulted extensively with Vice-Deans Pamela Klassen and Poppy Lockwood as well as with faculty within the Human Biology program. The development of the new program structure was also done in collaboration with Dr. Andrea Cortinois from the Dalla Lana School of Public Health. We had a series of meetings from March to August 2016 to discuss and review development of both the major and specialist in the HMB: Global Health Program. The program proposals were also sent on December 7, 2016 to the Health Studies program, The Centre for Indigenous Studies, The Department of Economics, and the Department of Anthropology to notify them that a significant number of their courses are being listed as program options, but that we are not asking for priority enrolment into these courses nor are we asking for pre-requisite waivers. All four programs have responded positively, and have consented to having their courses listed in this program. After consultations with EEB in January 2017 following the Life Science Planning meeting, we have included BIO220H1 as an option to Requisite line 11, and renamed it courses on the social and ecological dimensions of Global Health to better describe the courses listed therein. The only other feedback received from the Life Science Planning meeting was from Biochemistry, which wanted BCH210H1 to be included in the program, but after further discussions with Biochemistry, and pointing out that BCH210H1 is required in the Global Health specialist program, Biochemistry has agreed that HMB's proposed program for the Global Health major is rationale, and they have consented that BCH210H1 is not required for the Global Health major.</td>
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<th>Diversity:</th>
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<td>The re-design of the global health major program ensures all students receive a well-rounded education in the field of global health. HMB works closely with Accessibility Services, and accommodations requested are met. This will not change. Further, many of our faculty work to offer a variety of assignments that better provide to a variety of learners in their courses.</td>
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<th>Resource Implications:</th>
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<td>Current support is adequate.</td>
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<th>Faculty and TA Support:</th>
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<tr>
<td>Current support is adequate.</td>
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<tr>
<td><strong>Global Health Specialist</strong></td>
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<tr>
<td><strong>Start Session:</strong></td>
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<tr>
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<td><strong>Current Enrolment Requirements:</strong></td>
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<tr>
<td>This is a Type 3 limited enrolment program. Meeting the following minimum criteria does not guarantee admissions to the program.</td>
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<tr>
<td>BIO120H1 with a minimum mark of 60%</td>
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<td>BIO130H1 with a minimum mark of 60%</td>
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<td>CHM136H1 and CHM135H1 or CHM138H1 and CHM139H1 or CHM151Y1 with a minimum mark of 60%</td>
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<td>MAT135H1 or PHY131H1 or PHY151H1 with a minimum mark of 60%</td>
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<td>and, a composite average of at least 70% on the above 2.5 FCE.</td>
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<td>Students may apply for this specialist program only during Round 1 of Type 3 Enrolment. Students applying for admissions to the program utilising transfer credits or later than the end of their first year will be considered on a case-by-case basis. For more information about Type 3 enrolment, visit the Faculty of Arts &amp; Science Subject Program Enrolment Instructions website.</td>
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<tr>
<td><strong>New Enrolment Requirements:</strong></td>
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<tr>
<td>This specialist is a Type 3 limited enrolment program. Admissions will be based on the following criteria, however achieving the minimum marks listed does not guarantee admission to the Fundamental Genetics and its Applications specialist program in any given year.</td>
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<td>Applying with less than 8 FCEs:</td>
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<td>Completion of BIO130H1 with a minimum grade of 65</td>
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<tr>
<td>Completion of CHM135H1 and completion of CHM136H1 with a minimum grade of 55 (or CHM151Y1 with a minimum grade of 55).</td>
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<tr>
<td>Transfer credits will be accepted in lieu of the chemistry requirements only if they carry a direct exclusion or equivalency to a pre-approved chemistry course. Please carefully check your Transfer Credit Assessments.</td>
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<tr>
<td>Completion of 4.0 FCE</td>
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<td>Applying with 8 or more FCEs completed:</td>
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<tr>
<td>Completion of BIO230H1/ BIO255H1 with a minimum grade of 65</td>
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<td>Completion of BIO220H1</td>
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<td>Completion of HMB265H1/ BIO260H1</td>
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<td>Completion of BCH210H1</td>
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<tr>
<td>Students may apply for this major program during Round 1 and Round 2 of Type 3 Enrolment after they have earned</td>
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4.0 FCE. Students applying for admissions to the program utilizing transfer credits will be considered on a case-by-case basis. Students entering from CEGEP or from another university should contact hmb.undergrad@utoronto.ca after their transfer credit assessment has been complete for program enrolment assessment. For more information about Type 3 enrolment, visit the Faculty of Arts & Science Subject Program Enrolment Instructions website.

**Current Completion Requirements:**

**Required courses (15.5 FCE)**

Prior to entering POST:
1. BIO120H1, BIO130H1
2. (CHM136H1, CHM135H1) / (CHM138H1, CHM139H1)/CHM151Y1 *(transfer credits will be accepted in lieu of the chemistry requirements only if they carry a direct exclusion to a pre-approved chemistry course)*
3. (MAT135, MAT136) / (PHY131H1, PHY132H1) / (PHY151H1, PHY152H1)

Year 2: Foundations in global health
4. HMB203H1
5. BIO220H1, BIO230H1/BIO255H1
6. Statistics: STA220H1/PSY201H1/HMB325H1
7. 0.5 from Bio-Social Courses: ANT100Y1/GGR100H1/GGR107H1/GGR124H1/PHL100Y1/PSY100H1/SOC101Y1/SOC102H1/SOC103H1/TRN150Y1/TRN151Y1/VIC170Y1/VIC171Y1/NEW150Y1/POL101Y1/WGS160Y1
8. 1.0 FCE from Environment or Resource Management courses: JGE236H1/FOR201H1/GGR201H1/GGR203H1/GGR206H1/ENV221H1/ENV222H1
9. 1.0 FCE from Social, Cultural or Political Science courses: ANT204H1/ANT208H1/GGR216H1/GGR220H1/HST209H1/JGI216H1/JSU237H1/NEW250Y1/PHL273H1/PHL275H1/PHL281H1/POL201Y1/POL208Y1/PSY220H1/SOC205H1/SOC210H1/SOC214H1/SOC243H1/SOC244H1/SOC246H1/SOC256H1/SOC281H1/WGS271Y1

Year 3: Selected Topics in global health
10. HMB303H1
11. 1.0 FCE from Biological Sciences: HMB265H1/HMB342H1/HMB390H1/ANT203Y1/BCH210H1/BIO251H1/(BIO270H1+BIO271H1)/EEB225H1/EEB263Y1/ENV234H1/JGE236H1/(PSL300H1+PSL301H1)/STA221H1
12. 0.5 FCE from a higher year lab course: HMB312H1/BCH370H1/CSB330H1/CSB350H1/MGY379Y1/PSL372H1
13. 1.5 FCE from Basic Medical Sciences: CSB351Y1/LMP363H1/MGY377H1/MGY378H1/NSF284H1
14. 0.5 FCE from Ecology/Evolution: EHJ352H1/EEB319H1/EEB322H1/EEB323H1/EEB324H1/EEB328H1/EEB362H1/EEB365H1/BCH311H1/CSB349H1/PSL350H1
15. 1.0 FCE from Environmental Issues: GGR305H1/GGR307H1/GGR314H1/JGE321H1/ENV322H1/FOR302H1/FOR303H1

Year 4: Advanced topics in global health with emphasis on primary research and critical analysis
16. 1.0 FCE from 400-level Soc/Hum/Proj series: HMB420H1/HMB433H1/HMB462H1/HMB498Y1/HMB499Y1/ANT427H1/ANT440H1/ANT450H1/ANT452H1/ANT460H1/GGR418H1/GGR419H1/GGR438H1/GGR439H1/HST411H1/HST440H1/HST446H1/JFG475H1/NEW452H1/POL412Y1/POL413H1/POL417Y1/PHL415H1/PHL440H1/PHL470H1/PHL482H1/TRN411Y1/TRN419Y1/TRN421Y1/WGS426H1
17. 1.0 FCE from Social Perspective: HMB323H1/ANT345H1/ANT346H1/ANT374H1/ANT378H1/ENV333H1/ENV350H1/GGR329H1/GGR334H1/GGR338H1/ENV320H1/ENV333H1/ENV341H1/HST310H1/JNH350H1/POL373H1/POL380Y1/POL381H1/POL382H1/POL383H1/POL384H1/POL389H1/POL380H1/POL381H1/POL384H1/POL385H1/POL386H1/POL387H1/POL388H1/POL389H1/PSY201H1/PSY333H1/SOC312H1/SOC364H1/SOC381Y1/WGS365H1/WGS367H1/WGS386H1
18. 1.0 FCE from 400-level Sci/Env/Eco series: HMB433H1/HMB434H1/HMB443H1/HMB473H1/HAJ453H1
CSB452H1/CSB458H1/EEB428H1/EEB440H1/EEB459H1/EEB465H1/LMP402H1/LMP403H1/LMP406H1/LMP406H1/MGY434H1/MGY440H1/MIJ485H1/NFS485H1/NFS486H1/NFS487H1/NFS490H1/PSL420H1/PSL421H1/PSL470H1/PSL472H1/JEH455H1

n.b. At least 1.0 FCE must be at the 400-level

New Completion Requirements:

Required Courses (13.5 FCE, including at least 1.0 FCE at the 400-level)

Chemical and Physical Foundations of Biological Systems

(CHM135H1, CHM136H1) / (CHM138H1, CHM139H1) / CHM151Y1

Transfer credits will be accepted in lieu of the chemistry requirements only if they carry a direct exclusion or equivalency to a pre-approved chemistry course.

MAT135H1/PHY131H1/PHY151H1

BCH210H1

Biological Foundations of Living Systems

4. BIO120H1, BIO130H1
5. BIO220H1
6. BIO230H1/ BIO255H1
7. HMB265H1/ BIO260H1
8. PSL300H1, PSL301H1
9. 1.0 FCE from HMB302H1/ HMB322H1/ ANA300Y1/ ANA301H1/ CSB351Y1/ IMM340H1/ IMM350H1/ MGY377H1/ MGY378H1

Global Health Concentration Courses

10. HMB203H1
11. HMB323H1
12. 0.5 FCE from: PHS100H1/ GGR112H1/ PSY100H1/ABS201Y1/ ANT100Y1/ SOC101Y1/ ECO100Y1/ SOC102H1
Transfer credits from AP and IB psychology are not accepted.
13. 0.5 FCE from Epidemiology Courses: HMB342H1/ HST373H1
14. 2.0 FCE from courses on the biological dimensions of Global Health: HAJ453H1 /HMB323H1/HMB433H1/HMB436H1/ HMB437H1/ HMB440H1/ HMB443H1 /HMB462H1 /HMB473H1/ HMB474H1/ HMB496Y*/ HMB499Y1*/ JEH455H1/ CSB351Y1 /EEB325H1/ EHB352H1 /MGY350H1/ MGY377H1/ MGY378H1/ MYY485H1
15. 1.0 FCE from courses on the social and ecological dimensions of Global Health: HMB303H1/ HMB306H1/ ABS240Y1/ ABS250Y1/ ABS350H1/ ABS355H1/ ANT345H1/ANT348H1/ ANT358H1/ ANT458H1/ ANT460H1/ ECO314H1/ ECO324H1/ ECO333H1/ ECO342H1/ ECO369H1/ ECO402H1/ EEB428H1/ ENV341H1/ ENV430H1/ ENV432H1/ GGR433H1/ GGR434H1/ HST410H1/ HST440H1/ HST464H1/ JNH350H1/ NEW352H1/ NEW353H1/ NEW453H1/ NFS490H1/ PHS300H1/ PSY320H1/ PSY321H1

Data Analysis and Research-Based Courses

16. 0.5 FCE in statistics: HMB325H1/ STA220H1/ STA288H1/ PSY201H1/ HMB325H1
17. 0.5 FCE in bioethics: HMB306H1/ HMB406H1/ PHLL281H1
18. 1.0 FCE from: HMB496Y1*/ HMB499Y1*

* A research project from a different unit may be accepted with prior written approval from Human Biology if the course is not counting toward a different program.

Global Health Specialists Notes:

Courses can only count toward one requirement, even if listed as options to multiple requisites of the program

Not all courses listed have priority enrolment for Global Health specialists. Students are responsible for checking priority of courses and meeting course prerequisites for courses they wish to take.
Academic Context:

Global Health encompasses the field of studies focus on health systems in the human body, and social and cultural constructs affecting human and human health. The Global health program in the Faculty of Arts & Science exists to provide students with a firm foundation in human biology and introduce them to the field of public health through courses offered through the collaborative program in Human Biology and other courses offered within the Faculty of Arts & Science.

The Global Health specialist program has been revised to emphasize fundamental concepts in human biology. The program takes an interdisciplinary approach that integrates genetics, physiology, and psychology through courses in HMB as well as courses that are offered through other departments and programs.

Students graduating from the Global Health specialist program will be able to communicate effectively with the public, NGOs, private sector, and government on the basic principles of health and disease and issues surrounding its societal implications. Students will also be able to specialize by pursuing research through graduate studies, further training as health care professionals, or pursuing advanced degrees in social work, public policy, business, or law.

Learning Outcomes:

Students enter the program at the end of their first year after establishing a foundation in organic biology and chemistry as well as physical chemistry. Students will build on this foundation with foundational courses (HMB203H1, HMB265H1, BIO230H1, BCH210H1, PSL300H1, and PSL301H1 and a social introductory course of their choosing: PHS100H1/ GGR112H1/ PSY100H1/ABS201Y1/ ANT100Y1/ SOC101Y1/ ECO100Y1/ SOC102H1) that are designed to provide a broad overview of their respective subject areas, all of which supply the foundation to the study of human biology and global health. Students will also learn quantitative analysis skills in a statistics course, which will become immediately applied to a higher-year lab course or research based course in which students will learn lab skills and/or research skills relevant to further studies in health and disease and cellular molecular biology.

Depth of Knowledge:

Introductory courses are designed to expose students to fundamental concepts in genetics (HMB265H1/BIO260H1), global health (HMB202H1), as well as molecular biology (BIO230H1/BIO255H1). These courses provide a core knowledge base in these areas from which students will build. Students are then introduced to more advanced health and disease courses that highlight anatomy and physiology (ANA300Y1, PSL300H1, PSL301H1), histology (HMB302H1), and social constructs affecting human health and development (PHS100H1/ PSY100H1/ABS201Y1/ ANT100Y1/ SOC101Y1/ ECO100Y1). Further depth in these subjects is available in courses that focus on environmental impacts of health (JEH455H1), global health policy (HMB303H1), or principles of heavy metals in the body (HMB437H1).

Critical and Creative Thinking:

Students engage in critical thinking early on in the program. For example, in HMB265H1 there are assignments and tests that focus on the application of course concepts and information through problem-based learning, whereas written assignments and oral presentations are based on the synthesis and critical analysis of information and techniques from both primary and review articles. As with all life science programs, the integration of primary research findings into all of our courses, but especially in 300- and 400-level courses, is a critical component of the student learning experience. Students are taught how to interpret and critically analyze research as well as develop the skills in synthesizing information from multiple sources. The program also uses creative ways to facilitate reflective thinking. For example, HMB443H1 integrates community engaged learning as a primary method for teaching students about micronutrient deficiencies and food security.

Information Literacy:

Students learn effective written and oral strategies for communicating their analyses and critiques. For example, seminar courses often require students to be creative and persuasive in developing research grant proposals in translational medicine (HMB402H1). Team-based learning and peer evaluations, either in class or online, are also integrated in several different courses, such as HMB302H1 where students work in pairs or small groups where students engage in peer learning and evaluation. Seminar presentations or poster presentations are common among most advanced courses and this enables students to develop key skills in explaining, discussing, critically analyzing and synthesizing research findings in an oral presentation format. Students also have opportunities to cultivate an ability to interact and debate issues in a group setting with guest speakers that are experts in their fields, preparing them with communication skills that will be useful in a professional workplace.

Quantitative Reasoning:

While many courses will integrate quantitative analysis and reasoning, such as genetic mapping (HMB265H1), or
statistically analyzing health data (HMB342H1), the program also requires that students take basic statistics courses (HMB325H1/ STA220H1/ STA288H1/ PSY201H1) that will serve as a foundation for understanding concepts and analyzing research in other courses.

**Social and Ethical Responsibility:**

Several courses will introduce students to some of the bioethical, social and health policy issues and controversies surrounding specific topics in health and disease, such as AIDS (JNH350H1, HAJ453H1), and dementia (HMB440H1). The overall objective is to challenge students to think about the benefits of health and disease research, and the limits of these benefits, on society, including medicine, law and biotechnology.

**An Integrative, Inquiry Based Activity:**

Seminar courses at the 400-level provide a major opportunity for students to integrate knowledge from across a spectrum of health and disease related courses. Students in the specialist program are required to complete a full-year research project course or a summer research project course (HMB496Y1/HMB499Y1), although this is not a requirement. Students will typically identify suitable supervisors in hospital research institutes or campus-based laboratories and research groups. Research project course oversight includes a HMB faculty advisor facilitates the placements, guide workshops on research presentation skills or apply statistical analyses (in collaboration with Department of Statistical Sciences), as well as organize research presentation days (with research faculty to serving as assessors). Students gain invaluable first-hand experience integrating their knowledge of health and disease and other related subjects, learn to apply their quantitative reasoning and analytical skills, practice effective communication and team-based learning, and learn about ethical standards in research.

**Program Delivery:**

**Method:** In Class; Online

**Mode:** Full Time; Part Time

**Brief Description of the Proposal:**

Modification of how Calendar listing is organized for better clarity of program requirements, Total FCE count reduced from 15.5 FCE to 13.5 FCE, complete assessment of value and necessity of each course listed, resulting in several requisite lines being merged together, and several requisite lines being separated out to ensure that all necessary foundation life science courses (such as PSL300H1 and PSL301H1 and BCH210H1) are required.

**Details of Proposed Change:**

Total FCE required has been reduced from 15.5 FCE to 13.5 FCE to make the program more manageable in four years to students enrolled in the program.

Update of specialist enrolment criteria to better demonstrate and offer more transparency on criteria already being used for specialist enrolment.

HMB265H1/ BIO260H1 and BCH210H1 are are now required, as are PSL300H1 and PSL301H1 are now required. The old requisite line was: HMB265H1/ HMB342H1/ HMB390H1/ANT203Y1/ BCH210H1 / BIO251H1/(BIO270H1+BIO271H1)/ EEB225H1/ EEB263Y1/ ENV234H1/ JGE236H1/ (PSL300H1+PSL301H1)/ STA221H1

Courses allowed for the program at the higher levels has been reviewed and revised to better reflect courses that are directly related to the study of global health and public policy related to health.

The number of Social/Environmental/Political perspective courses required has been reduced. The OLD Social/Environmental/Political perspective lines are:

- 7. 0.5 from Bio-Social Courses: ANT100Y1/ GGR100H1/ GGR107H1/ GGR124H1/ PHL100Y1/ PSY100H1/ SOC101Y1/ SOC102H1/ SOC103H1/ TRN150Y1/ TRN151Y1/ VIC170Y1/ VIC171Y1/ NEW150Y1/ POL101Y1/ WGS160Y1
- 8. 1.0 FCE from Environment or Resource Management courses: JGE236H1/ FOR201H1/ GGR201H1/ GGR203H1/ ENV221H1/ ENV222H1
- 9. 1.0 FCE from Social, Cultural or Political Science courses: ANT204H1/ANT208H1/GGR216H1/ GGR220H1/ HST209H1/JGI216H1/JSU237H1/NEW250Y1/PHL273H1/PHL275H1/PHL281H1/POL201Y1/ POL208Y1/ PSY220H1/SOC205H1/ SOC210H1/ SOC214H1/ SOC243H1/ SOC244H1/ SOC246H1/ SOC256H1/ SOC281H1/ WGS271Y1
- 14. 0.5 FCE from Ecology/Evolution: EHU352H1/ EEB319H1/ EEB322H1/EEB323H1/ EEB324H1/ EEB328H1/ EEB362H1/ EEB365H1/ BCH311H1/ CSB349H1/ PSL350H1
15. 1.0 FCE from Environmental Issues: GGR305H1/ GGR307H1/ GGR314H1/ JGE321H1/ ENV322H1/ FOR302H1/ FOR303H1

16. 1.0 FCE from 400-level Soc/Hum/Proj series: HMB420H1/ HMB433H1/ HMB462H1/ HMB498Y1/HMB499Y1/ANT427H1 /ANT440H1/ ANT450H1/ ANT452H1/ ANT460H1/ GGR418H1/GGR419H1/GGR438H1/GGR439H1/HST411H1/HST440H1/HST446H1/ JFG475H1/ NEW452H1/POL412Y1/ POL413H1/POL417Y1/ PHL415H1/ PHL440H1/ PHL470H1/ PHL482H1/TRN411Y1/TRN419Y1/TRN421Y1/WGS426H1

17. 1.0 FCE from Social Perspective: HMB323H1/ ANT345H1/ ANT346H1/ ANT348H1/ ANT374H1/ENV333H1/ ENV350H1/GGR329H1/GGR334H1/GGR338H1/ ENV320H1/ ENV333H1/ ENV341H1/ HST310H1/ JNH350H1/ PHL373H1/PHL380H1/ PHL381H1/ PHL382H1/ PHL383H1/ PHL384H1/ POL301Y1/POL343Y1/ POL380H1/ POL380Y1/ PSY333H1/SOC312H1/ SOC364H1/ SOC381Y1/ WGS365H1/WGS367H1/WGS386H1

The NEW Social/Environmental/Political perspective lines proposed are:

11. 0.5 FCE from: PHS100H1/ GGR112H1/ PSY100H1/ABS201Y1/ ANT100Y1/ SOC101Y1/ ECO100Y1/ SOC102H1 Transfer credits from AP and IB psychology are not accepted.

14  1.0  FCE from courses on the social dimensions of Global Health: HMB303H1/ HMB306H1/ ABS240Y1/ ABS250Y1/ ABS350H1/ ABS355H1/ ANT345H1/ANT348H1/ ANT358H1/ ANT458H1/ ANT460H1/ ECO314H1/ ECO324H1/ ECO333H1/ ECO342H1/ ECO369H1/ ECO402H1/ EEB428H1/ ENV341H1/ ENV430H1/ ENV432H1/ GGR433H1/ GGR434H1/ HST410H1/ HST440H1/ HST464H1/ JNH350H1/ NEW352H1/ NEW353H1/ NEW453H1/ NFS490H1/ PHS300H1/ PSY320H1/ PSY321H1

Rationale:

The Human Biology Program completed a self-study in March 2014 that the program and the Faculty of Arts & Science has been steadily working on the recommendations to enhance the overall quality of the program. Many of the recommendations have already been put into effect: our smallest program (Health Care Ethics major) has been closed for further admissions and a proposal to formally close the program will be put forward in October 2017, we have signed a MOA giving the School of the Environment full ownership of the Environment and Health major and specialist (ASMAJ0365 and ASSPE0365) and have agreed to continue teaching and supporting the capstone requirement course for the specialist program: JEH455H1 (Topics in Environment & Health) and giving Environment and Health students enrolment priority in a number of our courses.

Impact that the proposal may have on students or other academic units/divisions:

Impact on other units should be minimal as enrolment is not planned to increase. The majority of the courses required in the program are the same course requirement/ requirement options as the current neuroscience major. Impact on our unit should also not increase as we have increased staff support. The Global Health specialist program is a Type 3 limited enrolment program and is capped at 44 students per cohort year (to guarantee they have a space in one of the lab courses we require them to take). The total program enrolment this year is 7, and the two year average is 5. We do anticipate this specialist program increasing in size as it is now more clear and manageable, but the cap of 44 per cohort year will remain in effect.

Consultation:

Director Dr. Melanie Woodin has consulted extensively with Vice-Deans Pamela Klassen and Poppy Lockwood as well as with faculty within the Human Biology program. The development of the new program structure was also done in collaboration with Dr. Andrea Cortinois from the Dalla Lana School of Public Health. We had a series of meetings from March to August 2016 to discuss and review development of both the major and specialist in the HMB: Global Health Program.

The program proposals were also sent on December 7, 2016 to the Health Studies program, The Centre for Indigenous Studies, The Department of Economics, and the Department of Anthropology to notify them that a significant number of their courses are being listed as program options, but that we are not asking for priority enrolment into these courses nor are we asking for pre-requisite waivers. All four programs have responded positively, and have consented to having their courses listed in this program.

After consultations with Biochemistry in January 2017, we have eliminated the option to use CHM247H1 in lieu of BCH210H1.

After consultation with EEB in January 2017, have added BIO220H1 as a required course and have included it in
admissions criteria for students applying with 8.0 or more FCE complete. (increasing the FCE count from 13.0 FCE to 13.5 FCE). This was the only feedback received from the Life Science Planning Meeting in January 2017.

Diversity:

The re-design of the global health major program ensures all students receive a well-rounded education in the field of global health. HMB works closely with Accessibility Services, and accommodations requested are met. This will not change. Further, many of our faculty work to offer a variety of assignments that better provide to a variety of learners in their courses.

Resource Implications:

Current support is adequate.

Faculty and TA Support:

Current support is adequate.