Health Sciences

This section presents the requirements for programs in:
- M.Sc. Health Sciences
- M.Sc. Health: Science, Technology and Policy
- M.Sc. Health Sciences with Specialization in Data Science
- Graduate Diploma in Health: Science, Technology and Policy
- Ph.D. Health Sciences

Program Requirements

M.Sc. Health Sciences (5.0 credits)

Requirements:

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<tr>
<th>1.</th>
<th>1.0 credit in:</th>
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<tbody>
<tr>
<td>HLTH 5901 [0.5]</td>
<td>Advanced Topics in Interdisciplinary Health Sciences</td>
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<tr>
<td>HLTH 5902 [0.5]</td>
<td>Seminars in Interdisciplinary Health Sciences for MSc</td>
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2. Completion of:

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3. 4.0 credits in:

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4. Twice-yearly meetings with the thesis Graduate Advisory Committee, with students meeting a level of progress as determined by the Committee.

Total Credits 5.0

Note: the final research seminar presentation must be completed within one month of the thesis defence.

M.Sc. Health: Science, Technology and Policy (6.0 credits)

Requirements:

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<tr>
<th>1.</th>
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<tr>
<td>HLTH 5100 [0.5]</td>
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<td>Statistics for Health Sciences</td>
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<td>Knowledge Translation</td>
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<td>New Health Technologies</td>
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<td>HLTH 5401 [0.5]</td>
<td>Interdisciplinary Problems in Health</td>
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<td>HLTH 5402 [0.5]</td>
<td>Biological and Social Fundamentals of Health</td>
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2. 1.0 credit from:

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3. 1.5 credits from:

a. HLTH selected topic elective courses focusing on areas of specific relevance to the health sector

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<tr>
<td>HLTH 5151 [0.5]</td>
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<td>HLTH 5202 [0.5]</td>
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b. Courses offered by other graduate programs, selected with the guidance and permission of the supervisor of graduate studies and with the permission of the specific program and requiring the prior completion of prerequisites. Examples include:

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<td>HLTH 5800</td>
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M.Sc. Health Sciences
with Specialization in Data Science (5.5 credits)

Requirements (5.5 credits)

1. **1.0 credits in:**
   - HLTH 5901 [0.5] Advanced Topics in Interdisciplinary Health Sciences
   - HLTH 5902 [0.5] Seminars in Interdisciplinary Health Sciences for MSc

2. **0.5 credits in:**
   - DATA 5000 [0.5] Data Science Seminar

3. **Completion of:**
   - HLTH 5905 [0.0] Final Research Seminar Presentation for MSc

4. **4.0 credits in:**
   - HLTH 5909 [4.0] MSc Thesis

5. Two-yearly meetings with the thesis Graduate Advisory Committee, with students meeting a level of progress as determined by the Committee.

Total Credits 5.5

Note: The final research seminar presentation must be completed within one month of the thesis defence.

Graduate Diploma in Health: Science, Technology and Policy (2.0 credits)

The Diplomas are designed to be completed in one year. However, as it is understood that most students in the Diploma programs will either be working or full-time students in another graduate program, students may take the program on either a part-time or full-time basis.

**Type 2 Diploma**

For graduate students currently enrolled in other Carleton graduate programs.

Requirements:

1. **1.5 credits in:**
   - HLTH 5100 [0.5] Fundamentals of Research Methods
   - HLTH 5201 [0.5] Fundamentals of Policy I: Policy Analysis
   - HLTH 5300 [0.5] Knowledge Translation

2. **0.5 credit in electives from either a or b:**
   - a. HLTH selected topic elective courses focusing on areas of specific relevance to the health sector:
   - b. Courses offered by other graduate programs, selected with the guidance and permission of the supervisor of graduate studies and with the permission of the specific program and requiring the prior completion of prerequisites.

Total Credits 2.0

Type 3 Diploma

For individuals currently employed, or with the goal of employment in the health sector, who are not currently registered in another Carleton graduate program.

Requirements:

1. **0.5 credit in:**
   - HLTH 5300 [0.5] Knowledge Translation

2. **1.5 credits in electives from either a, b or c:**
   - a. HLTH 5201 (recommended for students who do not have a strong policy background)
   - b. HLTH selected topic elective courses focusing on areas of specific relevance to the health sector:

   Total Credits 2.0

   HLTH 5100 [0.5] Fundamentals of Research Methods
   HLTH 5150 [0.5] Statistics for Health Sciences
   HLTH 5201 [0.5] Fundamentals of Policy II: The Health Sector
   HLTH 5300 [0.5] New Health Technologies
   HLTH 5401 [0.5] Interdisciplinary Problems in Health
   HLTH 5402 [0.5] Biological and Social Fundamentals of Health
   HLTH 5600 [0.25] Special Topics in Biostatistics and Epidemiology
   HLTH 5601 [0.25] Special Topics in Health Policy and Administration
   HLTH 5602 [0.25] Special Topics: Social and Behavioural
   HLTH 5603 [0.25] Special Topics in Environmental Health
   HLTH 5604 [0.25] Special Topics in the Science of Disease
   HLTH 5605 [0.25] Special Topics: Engineering, Design and Computer Science
   HLTH 5700 [0.5] Special Topics in Biostatistics and Epidemiology
   HLTH 5701 [0.5] Special Topics in Health Policy and Administration
   HLTH 5702 [0.5] Special Topics: Social and Behavioural
   HLTH 5703 [0.5] Special Topics in Environmental Health
   HLTH 5704 [0.5] Special Topics in the Science of Disease
   HLTH 5705 [0.5] Special Topics: Engineering, Design and Computer Science

HLTH 5600 [0.25] Special Topics in Biostatistics and Epidemiology
HLTH 5601 [0.25] Special Topics in Health Policy and Administration
HLTH 5602 [0.25] Special Topics: Social and Behavioural
HLTH 5603 [0.25] Special Topics in Environmental Health
HLTH 5604 [0.25] Special Topics in the Science of Disease
HLTH 5605 [0.25] Special Topics: Engineering, Design and Computer Science
HLTH 5700 [0.5] Special Topics in Biostatistics and Epidemiology
Higher in each course in the program.

All candidates are required to obtain a grade of B- or higher in each course in the program.

See the General Regulations section of this Calendar.

Regulations
2021-2022 Carleton University Graduate Calendar

Admission
Applicants for the master’s program will normally hold an Honours undergraduate degree or equivalent professional degree. Normally, an average of B+ or higher is required for admission. At least one university-level course in statistics is also required for admission. Applicants judged to be generally acceptable but deficient in some aspect of preparation may be asked to complete course-work in addition to the program requirements. In addition to transcripts and letters of reference, application packages will include a statement of interest explaining how the applicant's career goals are aligned with the program and a statement of expertise, including previous research and/or work experience. The admissions committee will also consider the requirement for an appropriate balance of academic backgrounds to provide the disciplinary expertise required for the group projects, which are designed to represent a mixed-discipline workplace in the health sector.

Students whose first language is not English, or who have not completed a previous degree at an English speaking university, must demonstrate an adequate command of English. Please refer to section 3.6 of the general regulations in the Graduate Calendar.

Students may receive advanced standing with transfer of credit for up to 1.5 credits. Advanced standing will be considered only for core courses. It will be determined on an individual basis in consultation with the M.Sc Supervisor and the Faculty of Graduate and Postdoctoral Affairs and pursuant to Section 6.1 of the General Regulations section of this Calendar. In general, a grade of B+ or higher is necessary in the equivalent courses in order to receive advanced standing.

Note: students in the Diploma programs are not eligible to receive university funding.

Admission
The normal requirement for admission into the Ph.D. program is an M.Sc. degree in a relevant field. Students who are in the Health Sciences M.Sc. program may be admitted to the Ph.D. program if they show outstanding academic performance and demonstrate significant promise for advanced research, upon recommendation of the student’s Graduate Advisory Committee and approval by the Graduate Advisor.

Admission
Applicants must have a bachelor’s degree (or equivalent). Normally, an average of B+ or higher is required for admission. A university level course in statistics is also required for admission.

Students whose first language is not English, or who have not completed a previous degree at an English speaking university, must demonstrate an adequate command of English. Please refer to section 3.6 of the general regulations in the Graduate Calendar.

Note: students in the Diploma programs are not eligible to receive university funding through the program.
Health Sciences (HLTH) Courses

**HLTH 5100 [0.5 credit]**  
**Fundamentals of Research Methods**  
Experimental design, statistical analysis and interpretation of results in health science research, principles and methods of epidemiology, fundamentals of research ethics.  
Includes: Experiential Learning Activity  
Prerequisite(s): university-level statistics.

**HLTH 5101 [0.0 credit]**  
**Statistical Software and its Application to Health Sciences Primer**  
Introduction to statistical softwares used to analyze health research data. Data management topics include data entry, manipulation, and elementary statistical analyses using SAS, SPSS, Stata and R. Other topics include privacy/maintaining security of health datasets. For students without strong backgrounds in biostatistics/data handling.  
Includes: Experiential Learning Activity

**HLTH 5150 [0.5 credit]**  
**Statistics for Health Sciences**  
Statistical methods commonly used in analyses of health data. This applied course covers topics related to descriptive and graphical methods, tests of hypotheses in both paired and independent samples, linear regression, survival analysis, and logistic regression.  
Includes: Experiential Learning Activity  
Lecture three hours a week, lab/workshop three hours a week.

**HLTH 5151 [0.5 credit]**  
**Principles of Epidemiology**  
Introduction to epidemiologic concepts and methods. Different types of epidemiological study designs. Fundamental concepts of: definitions and measures of disease frequency and effects, causality, bias, sample size, confounding and interaction.  
Includes: Experiential Learning Activity

**HLTH 5201 [0.5 credit]**  
**Fundamentals of Policy I: Policy Analysis**  
Policy analysis and policy processes with an emphasis on the stages of the policy process, as well as the influences of institutions, ideas and interests.

**HLTH 5202 [0.5 credit]**  
**Fundamentals of Policy II: The Health Sector**  
Canadian health policies and programs with emphasis on the economics, politics and public administration of the healthcare sector.

**HLTH 5300 [0.5 credit]**  
**Knowledge Translation**  
The application of knowledge translation in the formulation of policy and the development of skills required to maximize the impact of scientific findings through real world programs and policies and communication skills for diverse audiences.  
Precludes additional credit for NEUR 5801. Also offered at the undergraduate level, with different requirements, as HLTH 4701, for which additional credit is precluded.

**HLTH 5350 [0.5 credit]**  
**New Health Technologies**  
Overview of new and emerging health technologies, including medical and assistive devices, diagnostics and screening, genetics, reproduction, tissue regeneration, imaging, and health informatics. Health technology assessment methods and issues. Regulatory, ethical and social implications; considerations in the developing world.  
Includes: Experiential Learning Activity  
Also offered at the undergraduate level, with different requirements, as HLTH 4102, for which additional credit is precluded.

**HLTH 5401 [0.5 credit]**  
**Interdisciplinary Problems in Health**  
Development of an understanding of the scope and interdisciplinary nature of issues that impact the health of Canadians is the focus of this course.

**HLTH 5402 [0.5 credit]**  
**Biological and Social Fundamentals of Health**  
What comprises a healthy body and mind? This course addresses the psycho-social and biological mechanisms that may interact to determine health outcomes. The course examines complex relationships between social, environmental, and biological factors underlying some of the most important and emerging health concerns today.

**HLTH 5403 [0.5 credit]**  
**Host-Pathogen Interactions**  
Advanced cellular and molecular mechanisms governing host-pathogen interactions and their contribution to disease. Exploration of immune signaling and recognition, virulence factors, antimicrobial resistance and research techniques used in this field.  
Prerequisite(s): Permission of the department. Also offered at the undergraduate level, with different requirements, as HLTH 4304, for which additional credit is precluded.

**HLTH 5501 [2.0 credits]**  
**Collaborative Group Research Project**  
Student teams, supervised by a cross-disciplinary team of faculty, will collaborate on a project that addresses a real-world health concern.  
Includes: Experiential Learning Activity  
Prerequisite(s): HLTH 5400.
HLTH 5504 [1.0 credit]
Interdisciplinary Health Research Project - Group
Student teams will collaborate on a research project that addresses a real-world health concern, supervised by a cross-disciplinary team of faculty. Students must be continually registered in this course throughout their degree program (five terms.). Includes: Experiential Learning Activity
Precludes additional credit for HLTH 5502 (no longer offered), HLTH 5503 (no longer offered), HLTH 5505.

HLTH 5505 [1.0 credit]
Interdisciplinary Health Research Project – Individual
An independent research project that addresses a real-world health concern, supervised by a faculty member and advised by a cross-disciplinary team of experts. Students must be continually registered in this course throughout their degree program (five terms.). Includes: Experiential Learning Activity
Precludes additional credit for HLTH 5502 (no longer offered), HLTH 5503 (longer offered), HLTH 5504.
Prerequisite(s): permission of the Faculty supervisor and the Department of Health Sciences.

HLTH 5600 [0.25 credit]
Special Topics in Biostatistics and Epidemiology
Selected topics in biostatistics and epidemiology, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.
Includes: Experiential Learning Activity

HLTH 5601 [0.25 credit]
Special Topics in Health Policy and Administration
Selected topics in health policy and administration, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.

HLTH 5602 [0.25 credit]
Special Topics: Social and Behavioural
Selected topics in the social and behavioural sciences, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.

HLTH 5603 [0.25 credit]
Special Topics in Environmental Health
Selected topics in environmental health, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.

HLTH 5604 [0.25 credit]
Special Topics in the Science of Disease
Selected topics in the science of disease, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.

HLTH 5605 [0.25 credit]
Special Topics: Engineering, Design and Computer Science
Selected topics in applications of engineering, design or computer science in health, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.

HLTH 5700 [0.5 credit]
Special Topics in Biostatistics and Epidemiology
Selected topics in biostatistics and epidemiology, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.
Includes: Experiential Learning Activity

HLTH 5701 [0.5 credit]
Special Topics in Health Policy and Administration
Selected topics in health policy and administration, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.

HLTH 5702 [0.5 credit]
Special Topics: Social and Behavioural
Selected topics in the social and behavioural sciences, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.

HLTH 5703 [0.5 credit]
Special Topics in Environmental Health
Selected topics in environmental health, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.

HLTH 5704 [0.5 credit]
Special Topics in the Science of Disease
Selected topics in the science of disease, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.
HLTH 5705 [0.5 credit]
Special Topics: Engineering, Design and Computer Science
Selected topics in applications of engineering, design or computer science in health, focusing on areas of specific relevance to the health sector, not available in regular program offerings. These courses are designed to provide depth of expertise and/or specific skills relevant to the workplace.

HLTH 5800 [0.5 credit]
Directed Studies in Health: Science, Technology and Policy
One-to-one instruction in selected aspects of specialized Health: Science and Technology subjects not covered by other graduate courses. Students may not take this course from their project supervisor(s), and are limited to one directed studies course per program.
Prerequisite(s): permission of the director of Health: Science, Technology and Policy.

HLTH 5801 [0.5 credit]
Health: Science, Technology and Policy Practicum
This practicum supports students in gaining relevant and practical experience through applying course learning at approved organizations. Students are responsible for arranging the placement with an external partner where the practicum will be held, preparing a learning contract, and completing a field-based project deliverable.
Includes: Experiential Learning Activity
Prerequisite(s): Completion of two semesters of the MSc in HSTP program, permission of the department and at the discretion of the practicum supervisor. Students may not be supervised by their MSc research supervisor(s) and are limited to one practicum per program.

HLTH 5901 [0.5 credit]
Advanced Topics in Interdisciplinary Health Sciences
Discussion of current health problems and exploration of innovative interdisciplinary solutions. Development of skills required to perform critical analyses of health research to evaluate the quality, interpret the findings, and assess the impact of health sciences literature across disciplines.

HLTH 5902 [0.5 credit]
Seminars in Interdisciplinary Health Sciences for MSc
Development of scientific communication skills through attendance at interdisciplinary seminars and by the student presenting a seminar on their own thesis research. Topics have specific or broad relevance to health sciences. Graded SAT/UNS.

HLTH 5905 [0.0 credit]
Final Research Seminar Presentation for MSc
Final seminar of MSc thesis research. Seminar presentation should occur within one month of the final oral thesis defence.
Includes: Experiential Learning Activity

HLTH 5909 [4.0 credits]
MSc Thesis
Includes: Experiential Learning Activity

HLTH 6902 [0.5 credit]
Seminars in Interdisciplinary Health Sciences
Development of scientific communication skills through attendance at interdisciplinary seminars and by the student presenting a seminar on their own thesis research. Topics have specific or broad relevance to health sciences. Graded SAT/UNS.

HLTH 6903 [0.5 credit]
Grant Proposals and Ethics
Advanced course in writing successful grant proposals in Tri-Council (CIHR, NSERC, SSHRC) formats. Ethics associated with conducting health sciences research, including the preparation of ethics proposals for human and animal studies in health sciences research.
Includes: Experiential Learning Activity

HLTH 6904 [0.0 credit]
Mid-Program Defence
Departmental seminar and Graduate Advisory Committee meeting on PhD research including results to date and future research aims and directions, and on field-specific knowledge.
Includes: Experiential Learning Activity

HLTH 6905 [0.0 credit]
Final Research Seminar Presentation
Final seminar of PhD thesis research. Seminar presentation should occur within one month of the final oral thesis defence.
Includes: Experiential Learning Activity

HLTH 6909 [0.0 credit]
PhD Thesis
Includes: Experiential Learning Activity