# Health Sciences

## Program Requirements

### M.Sc. Health Sciences (5.0 credits)

**Requirements:**

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

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

3. **4.0 credits in:**
   - HLTH 5909 [4.0] MSc Thesis

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)

In consultation with the Graduate Advisor and potential project supervisor, students must carefully decide whether they wish to do a group or individual project. Whilst every effort will be made to accommodate this choice, there may not be a sufficient number of individual projects to go around, or some projects may be better suited for one type (group/individual) or the other. Students must be continually registered in the project (group/individual) for the duration of their degree program (5 terms). Students will not normally be able to change from the group to the individual project or vice-versa once a student has committed to one or the other.

**Requirements:**

1. **3.0 credits in:**
   - HLTH 5100 [0.5] Fundamentals of Research Methods
   - HLTH 5150 [0.5] Statistics for Health Sciences
   - HLTH 5201 [0.5] Fundamentals of Policy I: Policy Analysis
   - HLTH 5300 [0.5] Knowledge Translation
   - HLTH 5350 [0.5] New Health Technologies
   - HLTH 5401 [0.5] Interdisciplinary Problems in Health

2. **1.0 credits in:**
   - HLTH 5502 [1.0] Interdisciplinary Health Research Project - Group
     or HLTH 5503 [1.0] Interdisciplinary Health Research Project - Individual

3. **2.0 credits from:**
   - HLTH 5151 [0.5] Principles of Epidemiology
   - HLTH 5202 [0.5] Fundamentals of Policy II: The Health Sector

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

**Total Credits** 6.0
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. Twice-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 credits in electives from:
   a. HLTH selected topic elective courses focusing on areas of specific relevance to the health sector:
      - 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 [0.25] 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

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:
   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:
      - 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 [0.25] 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

Total Credits 2.0

Ph.D. Health Sciences (10.0 credits)

Requirements:

1. 1.5 credits in:  
   - HLTH 5901 [0.5] Advanced Topics in Interdisciplinary Health Sciences
   - HLTH 6902 [0.5] Seminars in Interdisciplinary Health Sciences
   - HLTH 6903 [0.5] Grant Proposals and Ethics
2. Completion of:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HLTH 6904</td>
<td>Mid-Program Defence</td>
<td>0.0</td>
</tr>
<tr>
<td>HLTH 6905</td>
<td>Final Research Seminar Presentation</td>
<td>0.0</td>
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</tbody>
</table>

3. 8.5 credits in:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HLTH 6909</td>
<td>PhD Thesis</td>
<td>8.5</td>
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4. Twice-yearly meetings with thesis Graduate Advisory Committee, with students reaching a level of satisfaction as determined by the Committee

Total Credits: 10.0

Note: If the student fails to satisfy the requirements of HLTH 6904, he/she will be withdrawn from the program. The final research seminar presentation must be completed within one month of the thesis defence.

Regulations
See the General Regulations section of this Calendar.

M.Sc. Health: Science, Technology and Policy
Full-time candidates in the master's program are expected to complete their degree requirements within five terms (20 months) of first registration for full-time study.

Regulations
See the General Regulations section of this Calendar.

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

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.

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.

Health Sciences (HLTH) Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>HLTH 5100</td>
<td>Fundamentals of Research Methods</td>
<td>0.5</td>
<td>Experimental design, statistical analysis and interpretation of results in health science research, principles and methods of epidemiology, fundamentals of research ethics. Prerequisite(s): university-level statistics.</td>
</tr>
<tr>
<td>HLTH 5150</td>
<td>Statistics for Health Sciences</td>
<td>0.5</td>
<td>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. Lecture three hours a week, lab/workshop three hours a week.</td>
</tr>
</tbody>
</table>

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 through the program.
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.

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.
Prerequisite(s): HLTH 5100, HLTH 5200.
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.
Also offered at the undergraduate level, with different
requirements, as HLTH 4102, for which additional credit is
precluded.
Lecture and seminar three hours a week.

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 5502 [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).
Precludes additional credit for HLTH 5503.

HLTH 5503 [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).
Precludes additional credit for HLTH 5502.
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.

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.

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 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.

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.

HLTH 5909 [4.0 credits]  
MSc Thesis

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.

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.

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.
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.

HLTH 6909 [8.5 credits]
PhD Thesis

Summer session: some of the courses listed in this Calendar are offered during the summer. Hours and scheduling for summer session courses will differ significantly from those reported in the fall/winter Calendar. To determine the scheduling and hours for summer session classes, consult the class schedule at central.carleton.ca

Not all courses listed are offered in a given year. For an up-to-date statement of course offerings for the current session and to determine the term of offering, consult the class schedule at central.carleton.ca