

Health Sciences

This section presents the requirements for programs in:

- **M.Sc. Health Sciences**
- **M.Sc. Health Sciences with Collaborative Specialization in Accessibility**
- **M.Sc. Health Sciences with Collaborative Specialization in Data Science**
- **M.Sc. Health: Science, Technology and Policy**
- **M.Sc. Health: Science, Technology and Policy Advanced Completion Option**
- **M.Sc. Health: Science, Technology and Policy with Collaborative Specialization in Accessibility**
- **M.Sc. Clinical Trials and Regulatory Affairs**
- **Graduate Diploma in Health: Science, Technology and Policy**
- **Ph.D. Health Sciences**

Program Requirements

M.Sc. Health Sciences (5.0 credits)

Requirements:

1. 0.5 credit in:	0.5
HLTH 5903 [0.5]	Current Topics in Interdisciplinary Health Sciences
2. 0.5 credit from:	0.5
HLTH 5902 [0.5]	Seminars in Interdisciplinary Health Sciences for MSc
or elective, approved by Thesis Supervisor and Graduate Advisor	
3. 0.0 credit in:	0.0
HLTH 5906 [0.0]	Research Seminar Presentation for MSc
HLTH 5905 [0.0]	Final Research Seminar Presentation for MSc
4. 4.0 credits in:	4.0
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	5.0

M.Sc. Health Sciences with Collaborative Specialization in Accessibility (6.0 credits)

Requirements:

1. 0.5 credit in:	0.5
HLTH 5903 [0.5]	Current Topics in Interdisciplinary Health Sciences
2. 0.5 credit from:	0.5
HLTH 5902 [0.5]	Seminars in Interdisciplinary Health Sciences for MSc
or elective, approved by Thesis Supervisor and Graduate Advisor	
3. 1.0 credit in:	1.0
ACCS 5001 [0.5]	Critical Disability Studies
ACCS 5002 [0.5]	Accessibility and Inclusive Design Seminar

4. 0.0 credit in:	0.0
HLTH 5906 [0.0]	Research Seminar Presentation for MSc
HLTH 5905 [0.0]	Final Research Seminar Presentation for MSc
5. 4.0 credits in:	4.0
HLTH 5909 [4.0]	MSc Thesis (in the specialization)
6. Twice-yearly meetings with the thesis Graduate Advisory Committee, with students meeting a level of progress as determined by the Committee.	
Total Credits	6.0

M.Sc. Health Sciences with Collaborative Specialization in Data Science (5.5 credits)

Requirements (5.5 credits):

1. 0.5 credit in:	0.5
HLTH 5903 [0.5]	Current Topics in Interdisciplinary Health Sciences
2. 0.5 credit from:	0.5
HLTH 5902 [0.5]	Seminars in Interdisciplinary Health Sciences for MSc
or elective, approved by Thesis Supervisor and Graduate Advisor	
3. 0.5 credit in:	0.5
DATA 5000 [0.5]	Introduction to Data Science
4. 0.0 credit in:	0.0
HLTH 5906 [0.0]	Research Seminar Presentation for MSc
HLTH 5905 [0.0]	Final Research Seminar Presentation for MSc
5. 4.0 credits in:	4.0
HLTH 5909 [4.0]	MSc Thesis (in the specialization)
6. 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

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

Requirements:

1. 3.0 credits in:	3.5
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 5402 [0.5]	Biological and Social Fundamentals of Health
2. 0.5 credit in:	
HLTH 5903 [0.5]	Current Topics in Interdisciplinary Health Sciences
3. 1.0 credit from:	1.0
a) Research project pathway	
HLTH 5507 [1.0]	Interdisciplinary Health Research Project
b) Practicum pathway	
HLTH 5506 [1.0]	Field Research and Placement

4. 1.5 credits from: 1.5

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

HLTH 5151 [0.5]	Principles of Epidemiology
HLTH 5202 [0.5]	Fundamentals of Policy II: The Health Sector
HLTH 5403 [0.5]	Host-Pathogen Interactions
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 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 5800 [0.5]	Directed Studies in Health: Science, Technology and Policy
HLTH 5801 [0.5]	Health: Science, Technology and Policy Practicum

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:

BIOL 5407 [0.5]	Biostatistics I
BIOL 5515 [0.5]	Bioinformatics
BIOL 5516 [0.5]	Applied Bioinformatics
BIOL 6406 [0.5]	Genetic Toxicology
BIOM 5100 [0.5]	Biomedical Instrumentation
CHEM 5708 [0.5]	Principles of Toxicology
CHEM 5709 [0.5]	Chemical Toxicology
COMS 5206 [0.5]	Communication, Culture, Regulation
COMP 5308 [0.5]	Topics in Medical Computing
INAF 5705 [0.5]	Global Social Policy
INAF 5706 [0.5]	Global Health Policy
NEUR 5201 [0.5]	Foundations in Statistics for Neuroscience
PADM 5221 [0.5]	Health Policy in Canada
PADM 5222 [0.5]	Economics and Health Policy
PADM 5229 [0.5]	The Health of Populations
PADM 5817 [0.5]	Health Policy in Developing Countries
PHIL 5000 [0.5]	Special Topic in Philosophy
PHYS 5204 [0.5]	Physics of Medical Imaging
PSYC 5209 [0.5]	Topics in Health Psychology

SOCI 5209 [0.5]	Sociology of Science and Technology
SOWK 5302 [0.5]	Mental Health
STAT 5600 [0.5]	Mathematical Statistics I
STAT 5501 [0.5]	Mathematical Statistics II
STAT 5602 [0.5]	Analysis of Categorical Data

Total Credits 6.0

M.Sc. Health: Science, Technology and Policy Advanced Completion Option (5.0 credits)

Applicants with at least three years of demonstrated, relevant work experience in their health-related professional field may qualify for admission to the Advanced Completion Option. The Advanced Completion Option exempts students from the 1.0 credit practicum. Up to 0.5 credit of additional advanced standing may also be available based on the applicant's portfolio, to be determined on an individual basis by the department.

Requirements:

1. 3.0 credits in: 3.0

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. 0.5 credit in: 0.5

HLTH 5903 [0.5]	Current Topics in Interdisciplinary Health Sciences
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3. 1.5 credits from: 1.5

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

HLTH 5151 [0.5]	Principles of Epidemiology
HLTH 5202 [0.5]	Fundamentals of Policy II: The Health Sector
HLTH 5403 [0.5]	Host-Pathogen Interactions
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 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 5800 [0.5]	Directed Studies in Health: Science, Technology and Policy	
HLTH 5801 [0.5]	Health: Science, Technology and Policy Practicum	
b. Courses offered by other graduate programs, selected with the guidance and permission of the supervisor of graduate studies and with permission of the specific program and requiring the prior completion of prerequisites. Examples include:		
BIOL 5407 [0.5]	Biostatistics I	
BIOL 5515 [0.5]	Bioinformatics	
BIOL 5516 [0.5]	Applied Bioinformatics	
BIOL 6406 [0.5]	Genetic Toxicology	
BIOM 5100 [0.5]	Biomedical Instrumentation	
CHEM 5708 [0.5]	Principles of Toxicology	
CHEM 5709 [0.5]	Chemical Toxicology	
COMS 5206 [0.5]	Communication, Culture, Regulation	
COMP 5308 [0.5]	Topics in Medical Computing	
INAF 5705 [0.5]	Global Social Policy	
INAF 5706 [0.5]	Global Health Policy	
NEUR 5201 [0.5]	Foundations in Statistics for Neuroscience	
PADM 5221 [0.5]	Health Policy in Canada	
PADM 5222 [0.5]	Economics and Health Policy	
PADM 5229 [0.5]	The Health of Populations	
PADM 5817 [0.5]	Health Policy in Developing Countries	
PHIL 5000 [0.5]	Special Topic in Philosophy	
PHYS 5204 [0.5]	Physics of Medical Imaging	
PSYC 5209 [0.5]	Topics in Health Psychology	
SOCI 5209 [0.5]	Sociology of Science and Technology	
SOWK 5302 [0.5]	Mental Health	
STAT 5501 [0.5]	Mathematical Statistics II	
STAT 5600 [0.5]	Mathematical Statistics I	
STAT 5602 [0.5]	Analysis of Categorical Data	
Total Credits		5.0

M.Sc. Health: Science, Technology and Policy with Collaborative Specialization in Accessibility (6.0 credits)

Requirements:

1. 1.0 credit in:		1.0
ACCS 5001 [0.5]	Critical Disability Studies	
ACCS 5002 [0.5]	Accessibility and Inclusive Design Seminar	
2. 3.0 credits in:		3.0
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 5402 [0.5]	Biological and Social Fundamentals of Health	
3. 0.5 credit in:		0.5

HLTH 5903 [0.5]	Current Topics in Interdisciplinary Health Sciences	
4. 1.0 credit from:		1.0
HLTH 5507 [1.0]	Interdisciplinary Health Research Project (in the specialization)	
5. 0.5 credit from:		0.5
a. HLTH selected topic elective courses focusing on areas of specific relevance to the health sector		
HLTH 5151 [0.5]	Principles of Epidemiology	
HLTH 5202 [0.5]	Fundamentals of Policy II: The Health Sector	
HLTH 5403 [0.5]	Host-Pathogen Interactions	
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 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 5800 [0.5]	Directed Studies in Health: Science, Technology and Policy	
HLTH 5801 [0.5]	Health: Science, Technology and Policy Practicum	
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:		
BIOL 5407 [0.5]	Biostatistics I	
BIOL 5515 [0.5]	Bioinformatics	
BIOL 5516 [0.5]	Applied Bioinformatics	
BIOL 6406 [0.5]	Genetic Toxicology	
BIOM 5100 [0.5]	Biomedical Instrumentation	
CHEM 5708 [0.5]	Principles of Toxicology	
CHEM 5709 [0.5]	Chemical Toxicology	
COMS 5206 [0.5]	Communication, Culture, Regulation	
COMP 5308 [0.5]	Topics in Medical Computing	
INAF 5705 [0.5]	Global Social Policy	
INAF 5706 [0.5]	Global Health Policy	
NEUR 5201 [0.5]	Foundations in Statistics for Neuroscience	
PADM 5221 [0.5]	Health Policy in Canada	
PADM 5222 [0.5]	Economics and Health Policy	
PADM 5229 [0.5]	The Health of Populations	

PADM 5817 [0.5]	Health Policy in Developing Countries
PHIL 5000 [0.5]	Special Topic in Philosophy
PHYS 5204 [0.5]	Physics of Medical Imaging
PSYC 5209 [0.5]	Topics in Health Psychology
SOCI 5209 [0.5]	Sociology of Science and Technology
SOWK 5302 [0.5]	Mental Health
STAT 5600 [0.5]	Mathematical Statistics I
STAT 5501 [0.5]	Mathematical Statistics II
STAT 5602 [0.5]	Analysis of Categorical Data
Total Credits	6.0

M.Sc. Clinical Trials and Regulatory Affairs (4.5 credits)

Requirements:

1. 0.0 credit in:

HLTH 5101 [0.0]	Statistical Software and its Application to Health Sciences Primer (must be completed within two weeks of first semester)
HLTH 5811 [0.0]	Clinical Trials Primer (must be completed within two weeks of first semester)

2. 4.0 credits in: **4.0**

HLTH 5812 [0.5]	Clinical Trials 1: Introduction
HLTH 5813 [0.5]	Clinical Trials 2
HLTH 5814 [0.5]	Assessment and Patient Safety for Clinical Trials
HLTH 5815 [0.5]	Principles of Data Management and Analysis in Clinical Trials
HLTH 5816 [0.5]	Government Regulatory Processes
HLTH 5817 [0.5]	Government, Research Organizations, and Industry
HLTH 5818 [0.5]	Ethics, Community and Patient Engagement
HLTH 5819 [0.5]	Clinical Trials Protocols, Operations and Management

3. 0.5 credit from: **0.5**

BIOC 4708 [0.5]	Principles of Toxicology
CHEM 4305 [0.5]	Environmental Chemistry and Toxicology
HLTH 5150 [0.5]	Statistics for Health Sciences
HLTH 5151 [0.5]	Principles of Epidemiology
HLTH 5350 [0.5]	New Health Technologies
HLTH 5700 [0.5]	Special Topics in Biostatistics and Epidemiology
HLTH 5704 [0.5]	Special Topics in the Science of Disease
HLTH 5821 [0.5]	Effective Communication in Clinical Research and Regulatory Environments
STAT 5602 [0.5]	Analysis of Categorical Data
STAT 5603 [0.5]	Reliability and Survival Analysis

Total Credits 4.5

M.Sc. Clinical Trials and Regulatory Affairs (practicum pathway - 6.0 credits)

Requirements:

1. 0.0 credit in:

HLTH 5101 [0.0]	Statistical Software and its Application to Health Sciences Primer (must be completed within two weeks of first semester)
HLTH 5811 [0.0]	Clinical Trials Primer (must be completed within two weeks of first semester)

2. 4.0 credits in: **4.0**

HLTH 5812 [0.5]	Clinical Trials 1: Introduction
HLTH 5813 [0.5]	Clinical Trials 2
HLTH 5814 [0.5]	Assessment and Patient Safety for Clinical Trials
HLTH 5815 [0.5]	Principles of Data Management and Analysis in Clinical Trials
HLTH 5816 [0.5]	Government Regulatory Processes
HLTH 5817 [0.5]	Government, Research Organizations, and Industry
HLTH 5818 [0.5]	Ethics, Community and Patient Engagement
HLTH 5819 [0.5]	Clinical Trials Protocols, Operations and Management

3. 0.5 credit from: **0.5**

BIOC 4708 [0.5]	Principles of Toxicology
CHEM 4305 [0.5]	Environmental Chemistry and Toxicology
HLTH 5150 [0.5]	Statistics for Health Sciences
HLTH 5151 [0.5]	Principles of Epidemiology
HLTH 5350 [0.5]	New Health Technologies
HLTH 5700 [0.5]	Special Topics in Biostatistics and Epidemiology
HLTH 5704 [0.5]	Special Topics in the Science of Disease
HLTH 5821 [0.5]	Effective Communication in Clinical Research and Regulatory Environments
STAT 5602 [0.5]	Analysis of Categorical Data
STAT 5603 [0.5]	Reliability and Survival Analysis

4. 1.5 credits in: **1.5**

HLTH 5820 [1.5]	Clinical Trials Practicum
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Total Credits 6.0

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

Requirements:

1. 1.5 credits in: **1.5**

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: **0.5**

a. HLTH selected topic elective courses focusing on areas of specific relevance to the health sector:	
HLTH 5150 [0.5]	Statistics for Health Sciences

HLTH 5151 [0.5]	Principles of Epidemiology
HLTH 5202 [0.5]	Fundamentals of Policy II: The Health Sector
HLTH 5350 [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

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: 0.5

HLTH 5300 [0.5] Knowledge Translation

2. 1.5 credits in electives from either a, b or c: 1.5

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 5100 [0.5] Fundamentals of Research Methods

HLTH 5150 [0.5] Statistics for Health Sciences

HLTH 5151 [0.5] Principles of Epidemiology

HLTH 5202 [0.5] Fundamentals of Policy II: The Health Sector

HLTH 5350 [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

c. 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. No more than 0.5 credit can be taken outside of the department.

Total Credits 2.0

Ph.D. Health Sciences (1.5 credits)

Requirements:

1. 0.5 credit from: 0.5

HLTH 5901 [0.5] Advanced Topics in Interdisciplinary Health Sciences

HLTH 5903 [0.5] Current Topics in Interdisciplinary Health Sciences

2. 0.5 credit from: 0.5

HLTH 6902 [0.5] Seminars in Interdisciplinary Health Sciences

or elective, approved by Faculty Supervisor and Graduate Advisor

3. 0.5 credit in: 0.5

HLTH 6903 [0.5] Grant Proposals and Ethics

4. Completion of: 0.0

HLTH 6906 [0.0] Research Seminar Presentation for PhD

HLTH 6904 [0.0] Mid-Program Defence

HLTH 6905 [0.0] Final Research Seminar Presentation

5. 0.0 credit in: 0.0

HLTH 6909 [0.0] PhD Thesis

6. Twice-yearly meetings with thesis Graduate Advisory Committee, with students reaching a level of satisfaction as determined by the Committee

Total Credits 1.5

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.

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.

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.

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 Graduate Studies 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.

Precludes additional credit for HLTH 5903.

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 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 5506 [1.0 credit]**Field Research and Placement**

This practicum supports students in gaining relevant and practical experience through applying course learning at approved organizations.

Includes: Experiential Learning Activity

Precludes additional credit for HLTH 5801.

Prerequisite(s): Completion of two terms of the MSc HSTP program, permission of the department and at the discretion of the practicum supervisor.

Schedules may vary depending on the field placement site, but students are required to spend a minimum of 32 weeks over summer, fall and winter in the second year.

HLTH 5507 [1.0 credit]**Interdisciplinary Health Research Project**

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 5504, HLTH 5505.

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**

Individualized instruction in selected aspects of specialized Health Sciences subjects not covered by other graduate courses. Students are permitted to only take this course once per program. Their project supervisor(s) may supervise if the research to be conducted is different from their thesis/project research. Prerequisite(s): permission of the department.

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

Precludes additional credit for HLTH 5506.

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 5811 [0.0 credit]**Clinical Trials Primer**

Overview of the vast area of clinical trials of drugs and devices, and principles of informed consent, regulatory requirements, rigorous documentation, analysis, and reporting. Students will also work on certificates in biomedical ethics, good clinical practice, and others, for example from CITI Canada.

HLTH 5812 [0.5 credit]**Clinical Trials 1: Introduction**

Fundamentals of trials of health products and different phases and types of clinical trials. Investigator vs. sponsor-initiated trials, different regulatory agencies, the use of randomization, blinding, registration regulatory requirements, rigorous documentation, and common trials.

HLTH 5813 [0.5 credit]**Clinical Trials 2**

Other trial designs, recruitment of patients, data collection and quality control, interim monitoring, audits, inspections, timelines.

HLTH 5814 [0.5 credit]**Assessment and Patient Safety for Clinical Trials**

The importance of efficacy and safety measurements, biosamples, pharmacokinetics, pharmacodynamics, drug mechanism of action, reporting of harm, Data and Safety Monitoring Board, pharmacovigilance, consideration of special populations. Good clinical practice, good medical practice, and good laboratory practice.

Includes: Experiential Learning Activity

HLTH 5815 [0.5 credit]**Principles of Data Management and Analysis in Clinical Trials**

Randomization, biomarkers, endpoints, estimands, sample size requirements, random error and bias, multiple testing correction, intent-to-treat versus per-protocol, equipoise and stopping rules for trials, database development, validation and reporting/transferring, development of statistical analysis plans, considerations around missing data.

HLTH 5816 [0.5 credit]**Government Regulatory Processes**

Regulatory agencies (Health Canada, US Food and Drug Administration, European Medicines Agency) will be compared. Harmonization efforts of national drug approval agencies, timelines for an investigational New Drug Application including labeling, accelerated approval, breakthrough designation, orphan drugs, and biologics licence application.

HLTH 5817 [0.5 credit]**Government, Research Organizations, and Industry**

Overview of regulatory requirements of pharmaceutical companies, contracting research organizations, and communication with regulatory agencies. Negotiation and collaboration between sectors, incentives such as FDA priority review vouchers, project management, manufacturing and distribution, phase IV post-marketing and continued monitoring, pharmacovigilance and post-marketing changes.

HLTH 5818 [0.5 credit]**Ethics, Community and Patient Engagement**

Patient engagement, equipoise, informed consent, ethics board, monitoring, reporting/release of data in the literature, compassionate/expanded access; patient foundations, liaisons and advocates. Engaging with Indigenous communities and special populations. Considerations around translational research, generics, biosimilars, and labeling.

HLTH 5819 [0.5 credit]**Clinical Trials Protocols, Operations and Management**

Clinical protocols, electronic case report forms and guidelines, data management plan, monitoring plan, pharmacy manual, standard operating procedures, manual of operating procedures, delegation of authority logs and training logs. Leadership, logistics, budgeting.

HLTH 5820 [1.5 credit]**Clinical Trials Practicum**

Capstone credit course required for students in the practicum pathway. Experiential learning at a clinical site, regulatory site, CRO, or similar institution involved in clinical trials. Students will demonstrate the knowledge and skills gained and will present on their experience, efforts and lessons learned.

Includes: Experiential Learning Activity

HLTH 5821 [0.5 credit]**Effective Communication in Clinical Research and Regulatory Environments**

This course equips students with the skills to convey complex information in decision-based discussions and explain complex regulatory environments, preparing them for impactful roles in clinical trial research.

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.

Precludes additional credit for HLTH 5903.

HLTH 5902 [0.5 credit]**Seminars in Interdisciplinary Health Sciences for MSc**

Development of scientific communication skills through attendance at interdisciplinary seminars. Topics have specific or broad relevance to health sciences. Graded SAT/UNS.

HLTH 5903 [0.5 credit]**Current Topics in Interdisciplinary Health Sciences**

Exploration of current health challenges and opportunities, and the role of interdisciplinary approaches to understand health and disease. Development of skills required for communication, collaboration, literature appraisal. Includes student, faculty, and invited seminar speakers.

Precludes additional credit for HLTH 5401, HLTH 5901. Prerequisite(s): Permission of the Department of 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.

Includes: Experiential Learning Activity

HLTH 5906 [0.0 credit]**Research Seminar Presentation for MSc**

Seminar of MSc thesis research. Seminar presentation should occur after two terms in the MSc, and prior to enrolment in the second year.

Prerequisite(s): permission of the department.

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. 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 6906 [0.0 credit]

Research Seminar Presentation for PhD

Seminar of PhD thesis research. Seminar presentation should occur after two terms in the PhD in Health Sciences, and prior to enrolment in the second year.

Prerequisite(s): Permission of the department.

HLTH 6909 [0.0 credit]

PhD Thesis

Includes: Experiential Learning Activity