This section presents the descriptions of all courses offered at the University of Victoria. Courses are listed in alphabetical order by course abbreviation (BIOL, EDUC). The course abbreviations for all courses offered within each faculty are listed on page 248. A list of the course abbreviations and their corresponding subject areas is presented on page 249.

Please note that not all courses listed are necessarily offered every year; students should consult the department or faculty concerned for an official listing of the courses that will be offered in a given session. Registration and current timetable information is also available on the web at <uvic.ca/course-registration>.

Students must ensure that they are familiar with the program requirements and restrictions noted in the entry for each academic unit.
Courses by Faculty

Division of Medical Sciences
NRSC Neuroscience

Faculty of Education
ED-D Educational Psychology and Leadership Studies
Department of Educational Psychology and Leadership Studies
EDCI Curriculum and Instruction Studies
Department of Curriculum and Instruction
EPHE Exercise Science, Physical and Health Education
School of Exercise Science, Physical and Health Education
IED Indigenous Education

Faculty of Engineering
CIVE Civil Engineering
Department of Civil Engineering
CSC Computer Science
Department of Computer Science
ELEC Electrical Engineering
Department of Electrical and Computer Engineering
MECH Mechanical Engineering
Department of Mechanical Engineering

Faculty of Fine Arts
AHVS Art History and Visual Studies
Department of Art History and Visual Studies
ART Visual Arts
Department of Visual Arts
CH Cultural Heritage Management
Department of Art History and Visual Studies and Division of Continuing Studies
MUS Music
School of Music
THEA Theatre
Department of Theatre
WRIT Writing
Department of Writing

Faculty of Graduate Studies
GS Graduate Studies by Special Arrangement
IN Indigenous Nationhood
INTD Interdisciplinary Program

Faculty of Human and Social Development
ADMN Public Administration
School of Public Administration
CD Community Development
School of Public Administration
CYC Child and Youth Care
School of Child and Youth Care
DR Dispute Resolution
School of Public Administration
HINF Health Information Science
School of Health Information Science
HSD Human and Social Development
Interdisciplinary Courses
IGOV Indigenous Governance
IN Indigenous Nationhood
INGH Indigenous Health Studies
School of Public Health and Social Policy
NUED Nursing, Advanced Practice: Nurse Educator Option
School of Nursing
NUHI Nursing and Health Information Science
School of Nursing
NUNP Nursing, Advanced Practice: Nurse Practitioner Option
School of Nursing
NURA Nursing, Advanced Practice: Nurse Leadership Option
School of Nursing
NURP Nursing Policy and Practice
School of Nursing
NURS Nursing
School of Nursing
PADR Public Administration Dispute Resolution
School of Public Administration
PHSP Public Health and Social Policy
School of Public Health and Social Policy
SOCW Social Work
School of Social Work

Faculty of Humanities
DHUM Digital Humanities
ENGL English
Department of English
FRAN French
Department of French
GMST Germanic Studies
Department of Germanic and Slavic Studies
GRS Greek and Roman Studies
Department of Greek and Roman Studies
HSTR History
Department of History
ITAL Italian
Department of Hispanic and Italian Studies
LING Linguistics
Department of Linguistics
PAAS Pacific and Asian Studies
Department of Pacific and Asian Studies
PHIL Philosophy
Department of Philosophy
SLST Slavic Studies
Department of Germanic and Slavic Studies
SPAN Spanish
Department of Hispanic and Italian Studies

Faculty of Law
IN Indigenous Nationhood
LAW Law

Faculty of Science
ASTR Astronomy
Department of Physics and Astronomy
Faculty of Social Sciences

ANTH Anthropology
Department of Anthropology

CSPT Cultural, Social and Political Thought
Department of Political Science

ECON Economics
Department of Economics

ES Environmental Studies
School of Environmental Studies

GEOG Geography
Department of Geography

IN Indigenous Nationhood
Department of Political Science

POLI Political Science
Department of Political Science

PSYC Psychology
Department of Psychology

SDH Social Dimensions of Health
Social Dimensions of Health Program

SOCI Sociology
Department of Sociology

Sardul S. Gill Graduate School of Business

BUS International Management and Organization

MBA Master of Business Administration

MBME Master of Business Administration + Master of Engineering
Program and Faculty of Engineering

MBMS Master of Business Administration + Master of Science (CSC)
Program and Faculty of Engineering

MGB Master of Global Business
COURSES OF INSTRUCTION

Courses by Subject Area

Anthropology .......................................................... ANTH
  Faculty of Social Sciences
Art History and Visual Studies ................................... AHVS
  Faculty of Fine Arts
Astronomy .............................................................. ASTR
  Faculty of Science
Biochemistry .......................................................... BIOC
  Faculty of Science
Biochemistry and Microbiology ................................ BCMB
  Faculty of Science
Biology ................................................................. BIOL
  Faculty of Science
Chemistry .............................................................. CHEM
  Faculty of Science
Civil Engineering .................................................. CIVE
  Faculty of Engineering
Child and Youth Care .............................................. CYC
  Faculty of Human and Social Development
Community Development ....................................... CD
  Faculty of Human and Social Development
Computer Science ................................................ CSC
  Faculty of Engineering
Cultural Heritage Management ................................ CH
  Faculty of Social Sciences
Cultural, Social and Political Thought ....................... CSPT
  Faculty of Social Sciences
Curriculum and Instruction Studies ......................... EDCI
  Faculty of Education
Digital Humanities ................................................ DHUM
  Faculty of Humanities
Dispute Resolution ................................................ DR
  Faculty of Human and Social Development
Earth and Ocean Sciences ....................................... EOS
  Faculty of Science
Economics ........................................................... ECON
  Faculty of Social Sciences
Educational Psychology and Leadership Studies ........ ED-D
  Faculty of Education
Electrical Engineering ............................................ ELEC
  Faculty of Engineering
English ................................................................. ENGL
  Faculty of Humanities
Environmental Studies ............................................ ES
  Faculty of Social Sciences
Exercise Science, Physical and Health Education .......... EPHE
  Faculty of Education
Forest Biology ........................................................ FORB
  Faculty of Science
French ................................................................. FRAN
  Faculty of Humanities
Geography ............................................................ GEOG
  Faculty of Social Sciences
Germanic Studies ................................................... GMST
  Faculty of Humanities
Graduate Studies by Special Arrangement ................ GS
  Faculty of Graduate Studies
Greek and Roman Studies ....................................... GRS
  Faculty of Humanities
Health Information Science .................................... HINF
  Faculty of Human and Social Development
History ............................................................... HSTR
  Faculty of Humanities
Human and Social Development ............................. HSD
  Faculty of Human and Social Development
Indigenous Education ........................................... IED
  Faculty of Education
Indigenous Governance .......................................... IGOV
  Faculty of Human and Social Development
Indigenous Health Studies ..................................... INGH
  Faculty of Human and Social Development
Indigenous Nationhood .......................................... IN
  Faculty of Graduate Studies
International Management and Organization ............ BUS
  Sardul S. Gill Graduate School of Business
Italian ................................................................. ITAL
  Faculty of Humanities
Law ................................................................. LAW
  Faculty of Law
Linguistics ........................................................... LING
  Faculty of Humanities
Marine Science ..................................................... MRNE
  Faculty of Science
Master of Business Administration + Master of Engineering
<table>
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<tr>
<th>COURSES OF INSTRUCTION</th>
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<tr>
<td>Sardul S. Gill Graduate School of Business</td>
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<td>Master of Business Administration + Master of Science (CSC)</td>
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<td>Sardul S. Gill Graduate School of Business</td>
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<td>Master of Global Business</td>
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<td>Sardul S. Gill Graduate School of Business</td>
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<tr>
<td>Mathematics</td>
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<td>Faculty of Science</td>
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<tr>
<td>Mechanical Engineering</td>
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<td>Faculty of Engineering</td>
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<tr>
<td>Microbiology</td>
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<tr>
<td>Faculty of Science</td>
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<tr>
<td>Music</td>
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<tr>
<td>Faculty of Fine Arts</td>
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<tr>
<td>Neuroscience</td>
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<td>Division of Medical Sciences</td>
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<tr>
<td>Nursing</td>
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<td>Faculty of Human and Social Development</td>
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<tr>
<td>Nursing and Health Information Science</td>
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<td>Faculty of Human and Social Development</td>
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<tr>
<td>Nursing Policy and Practice</td>
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<td>Faculty of Human and Social Development</td>
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<td>Nursing, Advanced Practice: Nurse Educator Option</td>
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<tr>
<td>Faculty of Human and Social Development</td>
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<tr>
<td>Pacific and Asian Studies</td>
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<td>Faculty of Humanities</td>
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<td>Philosophy</td>
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<td>Faculty of Humanities</td>
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<tr>
<td>Physics</td>
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<tr>
<td>Faculty of Science</td>
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<tr>
<td>Political Science</td>
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<td>Faculty of Social Sciences</td>
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<tr>
<td>Psychology</td>
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<tr>
<td>Faculty of Social Sciences</td>
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<td>Public Administration</td>
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<td>Faculty of Human and Social Development</td>
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<td>Public Administration Dispute Resolution</td>
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<td>Faculty of Human and Social Development</td>
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<td>Public Health and Social Policy</td>
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<tr>
<td>Faculty of Human and Social Development</td>
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<tr>
<td>Slavic Studies</td>
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<td>Faculty of Humanities</td>
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<td>Social Dimensions of Health</td>
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<td>Faculty of Social Sciences</td>
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<td>Social Work</td>
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<td>Faculty of Social Sciences</td>
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<td>Sociology</td>
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<td>Faculty of Social Sciences</td>
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<td>Spanish</td>
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<td>Faculty of Humanities</td>
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<td>Statistics</td>
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<td>Faculty of Science</td>
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<td>Theatre</td>
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<td>Faculty of Fine Arts</td>
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<td>Visual Arts</td>
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<tr>
<td>Faculty of Fine Arts</td>
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<tr>
<td>Writing</td>
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<tr>
<td>Faculty of Fine Arts</td>
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</tbody>
</table>
## How to use the Course Listings

### Course abbreviation and number
Courses are listed alphabetically by course abbreviation of up to four letters (e.g., ANTH for Anthropology) and course number (e.g., 100). Three numbers are used for course number plus a letter as appropriate. The first digit indicates the year level:
- 0: university-level upgrading or undergraduate co-op work term
- 1 to 4: undergraduate level
- 5, 6: graduate level
- 7: Education Professional Year
- 8: Graduate co-op work term

### Cross-listed courses
The same course may be offered by two different departments. Such courses are listed twice, once under each department course abbreviation. Students may obtain credit for the course from either department, but not both.

### Former course abbreviation and number
If a course was previously offered at UVic under another abbreviation and number, the former abbreviation and number are shown here.

### Prerequisites and corequisites
Prerequisites are courses or other requirements that must be completed before a student may register in a course. Corequisites are courses or other requirements that must be completed at the same time as a specific course. For more information on how to read prerequisites, see <www.uvic.ca/prereq>.

### Sample Course Name
**SAMP 101**
*Units: 1.5*  
*Hours: 3-0-1*

**Sample Course Name**
*Also: CD 100*
*Formerly: SAMP 100A*

This sample course description illustrates the notations commonly found in a course description. Not all course descriptions include all the information shown in this sample. For clarification on any information presented in a course description, contact the department or faculty offering the course.

**Note:** Credit will be granted for only one of SAMP 101, SAMP 100A, CD 100.

**Prerequisite(s):** Admission to the program.

**Grading:** INP/COM, N, F.

### Units of credit
This is the number of units of credit assigned to a course. Some courses are listed with variable units (e.g., 1.5-3.0). Further information on the unit value of the course will usually be found in the course note. Students may also contact the department or faculty offering the course for information on variable unit courses.

### Hours of instruction
These numbers refer to the hours of instruction per week:
- 1st digit: hours assigned for lectures or seminars
- 2nd digit: hours assigned for laboratory or practical sessions
- 3rd digit: hours assigned to tutorials

### Notes
Notes provide information about any restrictions on the assignment of credit in cases where content overlaps, as well as the maximum allowable credit for courses that may be taken more than once. Notes may also provide additional information about a course.

### Grading
Courses that are not graded using standard letter grades include the alternative classifications for evaluation.

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**Course descriptions do not include information on when courses will be offered. That information is available at <www.uvic.ca/timetable>.
ADMN

Public Administration
School of Public Administration
Faculty of Human and Social Development

Students enrolled in the MPA On Campus program should also see courses listed as PADR.

ADMN 502A  Units: 1.5
Surveying, Appraising and Commissioning Information

Introduces students to essential skills and components of the research process, weaknesses and strengths. Key issues in research ethics and design are explored, including: research and data validity, measurement, qualitative methods, sampling, survey research techniques, questionnaire design, research design, measures of central tendency, dispersion, correlation, and computer-based analyses.

Note: Credit will be granted for only one of ADMN 502A, ADMN 557.

ADMN 502B  Units: 1.5
Data Analysis and Interpretation

Develops skills in understanding, evaluating and applying techniques of data analysis relevant to policy analysis and management research. Topics include: descriptive and inferential statistics; techniques of estimation in the context of opinion polls and related survey research methods; statistical testing using data collected from survey research, correlational studies, and experimental and quasi-experimental research designs. The computer lab component will allow students to further develop spreadsheet skills using EXCEL.

Pre-requisite(s):
- One of ADMN 502A, PADR 502, or PADR 502A; or
- permission of the school.

ADMN 504  Units: 1.5
Government and Governance

Provides a foundation that helps students build and refine their understanding of Canadian public sector governance. Focus is on key governance institutions and processes, the efforts made to reform them, and theories behind those reform initiatives and changes. Specifically, examines strategic governance challenges and reforms in areas such as service delivery, regulation, policy making, budgeting, citizen engagement, federal-provincial relations, public sector ethics and accountability.

ADMN 507  Units: 1.5
Leadership and Ethics in the Public Sector

Public leadership requires an understanding of others and one’s self in order to mobilize effort in challenging environments. Provides frameworks and practical strategies for understanding personal capacity, team dynamics, and working with others within and across organizational boundaries. Introduces students to competing values and ethics, and equips them with skills and strategies for analyzing, motivating and managing change and the challenges they may face.

ADMN 509  Units: 1.5
Microeconomics for Policy Analysis

Provides a foundation in microeconomic principles, the rationale for public sector interventions in the market, and essential tools for economic policy analysis. Students will be introduced to rational choice theory, resource allocation methods, supply and demand, efficiency and equity, elasticity, income redistribution, externalities, public goods, and imperfect information. Relies on practical problem-based learning. Contemporary themes include behavioral and nudge economics, economic inequality, and the moral economy.

Pre- or Corequisite(s):
- One of ADMN 502A, PADR 502, PADR 502A; and
- ADMN 504; or
- permission of the school.

ADMN 512  Units: 1.5
Public Financial Management and Accountability

Explores the budgeting cycle: budget preparation and execution, internal and external auditing, financial statements, and performance budgeting and reporting. Examines management tools that support resource allocation decisions and accountability. Considers the rationale for alternative goods and services provision arrangements. Reviews evidence-based approaches for efficient resource allocation decisions, benchmarking performance, and incentives to motivate employees and contractors. Explores public sector fiscal challenges.

Pre- or Corequisite(s):
- One of ADMN 502A, PADR 502, PADR 502A; and
- ADMN 509; or
- permission of the school.

ADMN 523  Units: to be determined
Special Topics in Public Sector Management

Provides a unique chance to study selected topics drawn from the current literature in public sector management or related fields and an excellent opportunity to explore the academic theory underpinning current public sector functions. Note: May be taken more than once for credit in different topics.

ADMN 531  Units: 1.5
Performance and Strategic Human Resource Management

Students explore the critical role of human capital in public organizations and how to align it with strategic objectives. Students learn about human resource management functions - planning, staffing, training and development, performance management, compensation, and labour relations - and theories and approaches to improving organizational performance. Considers some of the contemporary challenges, such as high public expectations, constrained budgets, demographic turnover, and technological change.

Note: Credit will be granted for only one of ADMN 531, ADMN 431.

Pre-requisite(s):
- ADMN 507 or PADR 504; or
- permission of the school.

ADMN 537  Units: 1.5
Program Evaluation and Performance Measurement

Examines program evaluation and performance measurement in public and nonprofit organizations. Emphasis is placed on acquiring skills needed to model programs, measure key constructs, select appropriate research designs, and conduct both quantitative and qualitative program evaluations. Issues involved in designing and implementing program performance measurement systems are introduced.

Note: Credit will be granted for only one of ADMN 537, ADMN 437.

Pre-requisite(s):
- One of ADMN 502A, PADR 502, or PADR 502A; and
- ADMN 502B; or
- permission of the school.

ADMN 544  Units: 1.5
Economic Evaluation Methods and Applications

A practical introduction to the theory and methods of economic evaluation, including cost-benefit analysis, cost-effectiveness analysis, and cost-utility analysis, with emphasis on public sector applications.

Pre-requisite(s):
- For students admitted to MPA program:
  - one of ADMN 502A, PADR 502, PADR 502A; and
  - ADMN 502B and ADMN 509.
- For students not admitted to MPA program:
  - permission of the school.

ADMN 547  Units: 1.5
Intergovernmental Relations in Canada

Examines the impact on public policy of relations between governments resulting from the distribution of powers among federal, provincial, and municipal governments in Canada. Topics will include the interpretive role of the courts, the instruments of fiscal federalism, administrative relationships, and the concepts of “executive federalism” and “intergovernmental governance”. Individual and team projects will explore how policy issues are handled at different stages and in different arenas of the intergovernmental process.

Note: Credit will be granted for only one of ADMN 547, ADMN 462, POL 462.

Recommendation(s):
ADMN 504 recommended prior to ADMN 547.

ADMN 548  Units: to be determined
Special Topics in Public Policy

A study of selected special topics in Public Policy drawn from the current literature in Public Administration or related fields.

Note: May be taken more than once for credit in different topics.

ADMN 550  Units: 1.5
Strategic Communication and Engagement

Communicating with and engaging stakeholders about policy priorities, problems, the design of policy and services, and implementation are crucial features of modern public and non-profit sector governance. Reviews theories, research, and practical strategies for identifying, analyzing and involving diverse groups in policy and program development, and developing multi-faceted communications strategies in the digital era. Students will also develop engagement and communications strategies.

Note: Credit will be granted for only one of ADMN 550, ADMN 470 (if taken with same topic).
# ADMN 551 - ADMN 598

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Title</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ADMN 551</td>
<td>1.5</td>
<td>Administrative Justice System in Canada</td>
<td>Examines constitutional and administrative law structures and principles that underlie Canada’s administrative justice system. Students develop critical understanding of (1) characteristics of federal and provincial systems, (2) legal principles under which statutory decision-making is done, (3) process and principles applied to development of administrative justice system legislation, (4) breadth and influence of tribunal decisions on activities of Canadians. Examples are drawn from federal and provincial levels; comparisons to US, UK and France as appropriate. Note: Credit will be granted for only one of ADMN 551, ADMN 551A, ADMN 551B.</td>
</tr>
<tr>
<td>ADMN 553</td>
<td>1.5</td>
<td>Understanding Cities</td>
<td>Cities are a basic building block to society, and offer an interesting opportunity to study political, social and economic issues. Examines European and North American/Canadian cities using academic and government resources to analyze and compare their various aspects.</td>
</tr>
<tr>
<td>ADMN 554</td>
<td>1.5</td>
<td>Responsible Public Management</td>
<td>Designed to give students the opportunity to: understand the value dimensions of public management; reflect upon and enhance their own ethical reasoning skills; critically examine existing behavioural standards and guidelines for public managers; work with colleagues to establish what actions would be morally defensible in real administrative and policy making situations; and consider what steps can be taken to enhance responsible public management. Note: Credit will be granted for only one of ADMN 554, ADMN 422, PADR 503.</td>
</tr>
<tr>
<td>ADMN 556</td>
<td>1.5</td>
<td>Managing Public Policy</td>
<td>Examines the theory and practice of public policy emphasizing the strategic aspects of problem identification, policy design, decision making, implementation and evaluation. Designed to provide students a thorough understanding of public policy and dynamics of the policy process and to apply this knowledge to important policy issues. Policy development is examined within the context of multi-level and multi-sector governance, and addresses the involvement of key players such as the courts, media, and other prominent stakeholders. Note: Credit will be granted for only one of ADMN 556, PADR 503. Prerequisite(s): • All of ADMN 502A, ADMN 504, ADMN 509, ADMN 512, ADMN 550; or • permission of the department.</td>
</tr>
<tr>
<td>ADMN 557</td>
<td>1.5</td>
<td>Public Sector Research Methods</td>
<td>Introduces research approaches and methodologies for policy analysis, evaluation and other analytical projects in the public and non-profit sectors and in preparation for the thesis. Introduces essential components of research for conceiving and conducting a research project: objectives of research, research design, data collection, analysis and presentation. The student identifies a topic and is supported to build a strong research proposal for their master’s thesis. Note: Credit will be granted for only one of ADMN 557, ADMN 502A.</td>
</tr>
<tr>
<td>ADMN 577</td>
<td>1.5</td>
<td>Strategic Planning and Implementation</td>
<td>Examines strategic planning and other types of planning in the public and nonprofit sectors. Illustrates ten steps involved in the cycle of strategic planning. Explores strategic planning initiatives and teaches students to construct mandates, mission and vision statements, goals, objectives, strategies, measures, and targets. Develops skills to conduct a situation analysis that includes an environmental scan, SWOT/SWOC analysis, and stakeholder analyses. Discusses the relationship between budget and plan. Develops competencies in implementing and evaluating strategic plans. Note: Credit will be granted for only one of ADMN 577, ADMN 477.</td>
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<tr>
<td>ADMN 578</td>
<td>1.5</td>
<td>European Union Urban Region Policies</td>
<td>Compares issues associated with the politics, policy analysis, and policy environment of cities and urban regions in the European Union (EU), including integration issues and Canada. Considers ways in which the EU intervenes to improve the policy capacity of urban/regional governments, looking at broad issues of economic development and growth, equity and redistribution in comparative perspective. Focuses on the responsibilities, functions, resources, bureaucracy, and multilevel governance issues linking the federal/state/local governments. Note: Credit will be granted for only one of ADMN 578, ADMN 478, ADMN 548 (if taken in the same topic).</td>
</tr>
<tr>
<td>ADMN 580</td>
<td>1.5</td>
<td>Qualitative Evaluation Methods and Applications</td>
<td>Explores the principles and practices of effective qualitative evaluation methods: planning, design strategies, data collection, analysis and reporting. Coursework includes: selecting appropriate design strategies and sampling methods; collecting data using in-depth, open-ended interviews, fieldwork-based observations, participant observation, and documents; analyzing large volumes of qualitative data to produce clear, credible and relevant findings. The course will also examine strategies for integrating multiple lines of qualitative findings in evaluations.</td>
</tr>
<tr>
<td>ADMN 581</td>
<td>1.5</td>
<td>Quantitative Methods for Public Policy Analysis and Program Evaluation</td>
<td>Designed to explore contemporary issues and problems in the field of evaluation and performance management. Topics will be selected for each offering of the course; examples of topics to be included are: contribution analysis; gaming of performance measurement; professionalizing evaluation; managing knowledge creation and its uses in complex organizations; understanding and influencing organization cultures to increase and sustain knowledge utilization; audit and evaluation; comparative evaluation; and evaluation in developing countries.</td>
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<tr>
<td>ADMN 590</td>
<td>to be determined</td>
<td>Directed Studies</td>
<td>Notes: • May be taken more than once for credit in different topics with permission of the school. • Pro Forma required.</td>
</tr>
<tr>
<td>ADMN 596</td>
<td>4.5</td>
<td>Evaluation Project</td>
<td>The evaluation project is a substantial evaluation of a policy or program designed and conducted for a public sector or non-profit organization. Each evaluation project will have a client and will be supervised by a faculty member in the School of Public Administration. The completed project report will be assessed by a committee consisting of the academic supervisor, a second reader (both members of the School of Public Administration), and the client for the project. Grading: INP, COM, N, F.</td>
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<tr>
<td>ADMN 598</td>
<td>4.5</td>
<td>Master’s Project</td>
<td>A substantial analysis of a management, policy or program problem which may be done for a client in the non-profit or public sector. The Master’s Project is prepared under the supervision of a faculty member in the School of Public Administration and must be both practical and academically rigorous. Students have the choice of working individually or with a student partner. A written project report is defended in an oral examination. Grading: INP, COM, N, F.</td>
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</table>
ADMN 599  Units: 6.0  
Master's Thesis  
Requires a substantial contribution to the knowledge in the field of Public Administration. An MPA Thesis will demonstrate a student's mastery of a substantive body of scholarly or practice literature as well as using appropriate and academically defensible methodologies to analyze research questions, test hypotheses or contribute new theoretical knowledge. Individual students will work with an academic advisor in the School of Public Administration.

Grading: INP, COM, N, F.

ADMN 600  Units: 0  
Doctoral Seminar  
The doctoral seminar supports the advancement of research and writing skills. Students will develop competencies in preparing and publishing research. Students are asked to register in this course each term during their PhD program.

Grading: INP, COM, N, F.

ADMN 602  Units: 1.5  
Research Design and Methods in Public Administration  
Examines research approaches and methodologies employed in public administration, concentrating on designing research projects: objectives of research, literature review, conceptual framing, research design, collecting and analysing data and presenting findings. Students critically appraise key methodological and methods issues, identify a topic and develop a dissertation proposal.

Note: Credit will be granted for only one of ADMN 602, ADMN 502A, ADMN 557.

ADMN 604  Units: 1.5  
Theories of Public Management  
Explores different theories and approaches to understanding public administration and reform. Considers variations in three areas: political and constitutional authority, accountability and responsibility, and the roles of elected and non-elected officials; government structures, responsibilities for policy and service delivery, and distributed governance; and patterns and trends in central decision-making, budgeting, control, transparency, and citizen engagement. Students will review seminal comparative studies on administrative practice and reform and undertake a comparative study on a selected topic.

Note: Credit will be granted for only one of ADMN 604, POLI 610.

ADMN 605  Units: 1.5  
Comparative Policy and Governance  
Reviews the challenges and trends confronting governments and society, diverging governance practices and outcomes across jurisdictions and policy domains. Reviews foundational concepts and theories of policy-making. Examines policy determinants such as history, culture, institutions and the economy; policy dynamics and processes such as agenda-setting and decision-making, networks and communities, policy change and transfer. Students conduct research on selected issues.

Note: Credit will be granted for only one of ADMN 605, POLI 507, POLI 607.

ADMN 607  Units: 1.5  
Organizational Behaviour and Analysis  
A review of the origins, analytic traditions, and evolution of the study of organizations, focusing on exploring and analyzing the behaviour of public organizations. Topics include goal formation, tasks, technology, formal structure, informal organization, motivation, perception, values, culture, information, decision making, group dynamics, conflict, leadership, empowerment, creativity, learning and innovation. Concepts and theories are complemented by reviewing seminal literature on private, public, and non-profit organizations, and by undertaking field research.

ADMN 608  Units: 1.5  
Innovation, Implementation and Evaluation in Public Administration  
Introduces and critically assesses approaches to designing, implementing and evaluating policies and programs in complex organizations. Topics include: designing public policies, ex ante policy and program analysis; innovation and change management; approaches for citizen and stakeholders' engagement, communication in public sector settings; evaluation criteria and approaches for assessing interventions. Students conduct research on selected issues.

ADMN 620  Units: 1.5  
Policy and Institutional Design and Analysis  
A review of the interdisciplinary foundations of the analysis and design of public policy, and the institutions and strategies for implementing them. Examines the rationale, comparative advantage, and combinations of government hierarchies, markets, networks, and policy instruments. Considers how to meld different disciplinary and professional perspectives and techniques for addressing design and implementation challenges, and how to draw lessons from different policy domains and jurisdictions, through case studies and projects in selected policy domains.

ADMN 621  Units: 1.5  
Policy and Program Evaluation and Performance  
Compares and assesses different theoretical and methodological approaches that have emerged in the evaluation field. Students read intensively for seminar discussions and preparation of a series of short papers during the semester. Topics include post-positivist, constructivist, critical realist and pragmatist theoretical approaches, qualitative and quantitative methodological approaches to doing evaluations, and challenges and emerging trends in the whole field.

ADMN 645  Units: 1.5  
Organizational Change and Development  
Examines the philosophy, history, and evolving approaches associated with organizational change and development, with special focus on initiating and managing change in the public sector. Reviews the diverse perspectives on change and the special roles of those who seek to change and develop organizations. Includes topics such as planned and unplanned change, alternative interventions, resistance, leadership, and incremental versus radical change. Students will undertake case studies and assessments of organizational change initiatives.

ADMN 681  Units: 1.5  
Quantitative Methods for Public Policy Analysis and Program Evaluation  
Describes the logic behind various quantitative methodologies used in conducting retrospective quantitative evaluations in public policy programs and research. Demonstrates the application of these methodologies using real-world policy applications. Topics may include: simple and multiple regression, endogeneity, limited dependent variables, panel data and experimental methods.

Note: Credit will be granted for only one of ADMN 681, ADMN 581.

ADMN 690  Units: 1.0-3.0  
Directed Studies  
Notes:
- May be taken more than once for credit in different topics with permission of the school.
- Pro Forma required.

ADMN 699  Units: 30.0  
Dissertation  
Prerequisite(s): ADMN 693.

Grading: INP, COM, N, F.

AHVS  Art History and Visual Studies  
Department of Art History and Visual Studies  
Faculty of Fine Arts  

AHVS 501  Units: 1.5  
Formerly: HA 501  
Colloquium in Theories and Practices  
Notes:
- Credit will be granted for only one of AHVS 501, HA 501.
- A compulsory seminar for all master's students.

AHVS 502  Units: 1.5  
Formerly: HA 502  
Special Topics in Art History and Visual Studies  
Note: Credit will be granted for only one of AHVS 502, HA 502.

AHVS 509  Units: 1.5  
Formerly: HA 509  
Workshop in Art Historical Writing  
Notes:
- Credit will be granted for only one of AHVS 509, HA 509.
- A compulsory workshop.

Prerequisite(s): AHVS 501 or HA 501.
### AHVS 520 - AHVS 693

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Description</th>
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| AHVS 520 | 1.5 | Formerly: HA 520  
Seminar in Medieval Art  
Note: Credit will be granted for only one of AHVS 520, HA 520. |
| AHVS 530 | 1.5 | Formerly: HA 530  
Seminar in the Contemporary Art of South and Southeast Asia  
An intensive examination of selected themes, histories and case studies in the contemporary arts and art worlds of South and/or Southeast Asia.  
Note: Credit will be granted for only one of AHVS 530, HA 530. |
| AHVS 540 | 1.5 | Formerly: HA 540  
Seminar in Renaissance Art  
Note: Credit will be granted for only one of AHVS 540, HA 540. |
| AHVS 545 | 1.5 | Formerly: HA 545  
Seminar in Early Modern Art, c. 1500-1750  
Note: Credit will be granted for only one of AHVS 545, HA 545. |
| AHVS 549 | 1.5 | Formerly: HA 549  
Seminar in Orientalism in Art and Architecture  
Note: Credit will be granted for only one of AHVS 549, HA 449, HA 549. |
| AHVS 550 | 1.5 | Formerly: HA 550  
Seminar in Islamic Art and Civilization  
Note: Credit will be granted for only one of AHVS 550, HA 550. |
| AHVS 552 | 1.5 | Formerly: HA 552  
Seminar in the Arts of Mughal India  
Note: Credit will be granted for only one of AHVS 552, HA 552. |
| AHVS 554 | 1.5 | Formerly: HA 554  
Seminar in 19th - and 20th- Century Architecture  
Note: Credit will be granted for only one of AHVS 554, HA 465, HA 554. |
| AHVS 555 | 1.5 | Formerly: HA 555  
Seminar in Canadian Art  
Note: Credit will be granted for only one of AHVS 555, HA 555. |
| AHVS 560 | 1.5 | Formerly: HA 560  
Seminar in Modern Art I (1870-1945)  
Note: Credit will be granted for only one of AHVS 560, HA 560. |
| AHVS 561 | 1.5 | Formerly: HA 561  
Seminar in Modern Art II (1945-1990)  
Note: Credit will be granted for only one of AHVS 561, HA 561. |
| AHVS 563 | 1.5 | Formerly: HA 563  
Seminar in Political Art  
Note: Credit will be granted for only one of AHVS 563, HA 563. |
| AHVS 564 | 1.5 | Formerly: HA 564  
Seminar in Contemporary Art  
Note: Credit will be granted for only one of AHVS 564, HA 564. |
| AHVS 565 | 1.5 | Formerly: HA 565  
Seminar in Contemporary North American Indigenous Arts  
Note: Credit will be granted for only one of AHVS 565, HA 565. |
| AHVS 570 | 1.5 | Formerly: HA 570  
Seminar in the Arts of China  
Note: Credit will be granted for only one of AHVS 571, HA 571. |
| AHVS 571 | 1.5 | Formerly: HA 571  
Seminar in the Theories and Practices of Art  
Note: Credit will be granted for only one of AHVS 578, HA 578. |
| AHVS 578 | 1.5 | Formerly: HA 578  
Seminar in the Contemporary Arts of the Pacific Northwest  
An intensive study of a selected aspect of Pacific Northwest art. Content will vary from year to year.  
Note: Credit will be granted for only one of AHVS 584, HA 584.  
May be taken more than once with permission of the department. |
| AHVS 580 | 1.5 | Formerly: HA 580  
Topics in Cultural Resource Management  
Note: Credit will be granted for only one of AHVS 580, HA 581.  
Prerequisite(s): Permission of the department. |
| AHVS 582 | 1.5 | Formerly: HA 582  
Seminar in Indigenous Arts  
Note: Credit will be granted for only one of AHVS 582, HA 482, HA 582. |
| AHVS 584 | 1.5 | Formerly: HA 584  
Seminar in Contemporary North American  
Indigenous Arts  
Note: Credit will be granted for only one of AHVS 584, HA 584. |
| AHVS 590 | 1.5 | Formerly: HA 590  
Directed Studies MA Level  
Note: Credit will be granted for only one of AHVS 590, HA 590 (if taken in the same topic).  
May be taken more than once for credit in different topics.  
Pro Forma required. |
| AHVS 593 | 1.5 | Formerly: HA 593  
Seminar on the Williams Collection  
An intensive study of selected aspect of the Williams Collection. Topics will vary.  
Note: Credit will be granted for only one of AHVS 593, HA 593.  
May be taken more than once with permission of the department.  
Several classes may be taught at area museums and galleries. |
| AHVS 598 | 4.5 | Formerly: HA 598  
Research Paper  
An extended research paper of approx. 10,000 words, which will be defended in an oral exam.  
Note: Credit will be granted for only one of AHVS 598, HA 598.  
Grading: INP, COM, N, F. |
| AHVS 601 | 1.5 | Formerly: HA 601  
Colloquium in Theories and Practices  
Note: Credit will be granted for only one of AHVS 601, HA 601.  
A compulsory course for all doctoral students, except for students who have credit for AHVS 501. |
| AHVS 609 | 1.5 | Formerly: HA 609  
Workshop in Art Historical Writing  
Note: Credit will be granted for only one of AHVS 609, HA 609. |
| AHVS 610 | 1.5-6.0 | Formerly: HA 610  
Directed Studies PhD Level  
Note: Credit will be granted for only one of AHVS 610, HA 610.  
A compulsory workshop. |
| AHVS 690 | 3.0 | Formerly: HA 690  
Candidacy Exam  
Note: Credit will be granted for only one of AHVS 690, HA 690.  
Grading: INP, COM, N, F. |
AHVS 699  
Units: 30.0  
Formerly: HA 699  
PhD Dissertation  
Note: Credit will be granted for only one of AHVS 699, HA 699.  
Prerequisite(s): AHVS 693 or HA 693  
Grading: INP, COM, N, F.

ANTH

Anthropology

Department of Anthropology

Faculty of Social Sciences

ANTH 500  
Units: 1.5  
Seminar in Anthropological Theory  
Diverse perspectives in anthropological thought, focusing on epistemological issues, integrative practice among anthropology's subfields, the collaborative dimensions of anthropological research, and implications for ethically engaged community-based research.  
Prerequisite(s): Permission of the program.

ANTH 510H  
Units: 1.5  
Medical Anthropology  
Prerequisite(s): Permission of the program.

ANTH 511  
Units: 1.5  
Formerly: ANTH 501  
Advanced Research Seminar in Inequality, Culture and Health  
In-depth and critical survey of current issues, topics, theory and method in anthropology, with particular emphasis on inequality and health.  
Note: Credit will be granted for only one of ANTH 511, ANTH 501.

ANTH 516  
Units: 1.5  
Seminar in Anthropological Research Methods  
An advanced consideration of the assumptions which lie behind various approaches to conducting research in anthropology.

ANTH 520  
Units: 1.5  
Specialized Themes in Anthropology  
Depending on the student's interests and the availability of an instructor, studies may be selected in one or more of: ANTH 520A, ANTH 520B, ANTH 520C.  
Note: May be taken more than once for credit in different topics with permission of the department.  
Prerequisite(s): Permission of the program.

ANTH 520A  
Units: 1.5  
Themes in Sociocultural Anthropology

ANTH 520B  
Units: 1.5  
Themes in Archaeology

ANTH 520C  
Units: 1.5  
Themes in Biological Anthropology

ANTH 530  
Units: 1.5  
Ethnology of Selected Areas  
Depending on the student's interests and the availability of an instructor, studies may be selected in a geographic area of the student's interest.  
Note: May be taken more than once for credit in different topics with permission of the department.  
Prerequisite(s): Permission of the program.

ANTH 542  
Units: 1.5  
Archaeology of a Selected Area  
Prerequisite(s): Permission of the program.

ANTH 551  
Units: 1.5  
Formerly: ANTH 550  
Advanced Research Seminar in Ecology and Evolution  
In-depth and critical surveys of current issues, topics, theory and method in topics related to both human and non-human primate ecology and evolution, including both morphological and behavioural adaptations and evolution.  
Note: Credit will be granted for only one of ANTH 550, ANTH 551.

ANTH 552  
Units: 1.5  
Selected Topics in Biological Anthropology  
Depending on the student's interests and the availability of an instructor, studies may be selected in one or more of: ANTH 552A, ANTH 552D, ANTH 552E.  
Prerequisite(s): Permission of the program.

ANTH 552A  
Units: 1.5  
Applied Topics in Osteological Methods  
Prerequisite(s): Permission of the program.

ANTH 552E  
Units: 1.5  
Advanced Topics in Biological Anthropology  
Prerequisite(s): Permission of the program.

ANTH 571  
Units: 1.5  
Advanced Research Seminar in Visual Anthropology and Materiality  
In-depth and critical survey of current issues, topics, theory and method relating to visual anthropology and materiality in historical and contemporary contexts.

ANTH 585  
Units: 1.5  
Advanced Research Seminar in Space, Place, Knowledge And Power  
Critical survey of contemporary theory and method in anthropology, with specific emphasis on space, place, knowledge, and power. Course content varies at discretion of instructor.

ANTH 590  
Units: 1.5-3.0  
Directed Studies  
Note: Pro Forma required.  
Prerequisite(s): Permission of the program.

ANTH 597  
Units: 0.0-3.0  
Thesis Proposal Development  
Offered every term, for MA students who are preparing their thesis proposals. After the proposal is approved, students enroll in 599.  
Grading: INP, COM, N, F.

ANTH 598  
Units: 0  
Comprehensive Examinations  
Note: Enrolment restricted to non-thesis MAs only.  
Grading: INP, COM, N, F.

ANTH 599  
Units: 7.5  
Thesis  
Grading: INP, COM, N, F.

ANTH 600  
Units: 1.5  
Professional Development in Anthropology  
Addresses the responsibilities of anthropologists in communicating the results of their work to academia and the public. Topics covered include (but are not limited to): research ethics, grants and contracts, teaching, conference paper presentation and publishing. Required for students in the PhD program in Anthropology, and Interdisciplinary PhD students with Anthropology as one of their disciplines.

ANTH 611  
Units: 1.5  
Advanced Research Seminar in Inequality, Culture and Health  
In-depth and critical survey of current issues, topics, theory and method in anthropology, with particular emphasis on inequality and health.

ANTH 612  
Units: 1.0  
Graduate Colloquium  
A compulsory colloquium for PhD students in Anthropology that meets weekly from late September until mid-April. Papers are presented by graduate students, faculty, and visiting scholars. PhD students are required to participate during the two years they are meeting the PhD residency requirement. Participation includes attendance, assistance with the organization of the colloquia and at least one paper presentation by the end of the second academic year of the PhD student's program.  
Grading: INP, COM, N, F.

ANTH 651  
Units: 1.5  
Advanced Research Seminar in Ecology and Evolution  
In-depth and critical survey of current issues, topics, theory and method in topics related to both human and non-human primate ecology and evolution, including both morphological and behavioural adaptations and evolution.

ANTH 671  
Units: 1.5  
Advanced Research Seminar in Visual Anthropology and Materiality  
In-depth and critical survey of current issues, topics, theory and method relating to visual anthropology and materiality in historical and contemporary contexts.

ANTH 685  
Units: 1.5  
Advanced Research Seminar in Space, Place, Knowledge and Power  
Critical survey of contemporary theory and method in anthropology, with specific emphasis on space, place, knowledge, and power. Course content varies at discretion of instructor.
ANTH 690 - ASTR 505

ANTH 690 Units: 1.5
Specialized Directed Study
Intended to prepare students to participate in and contribute to research and knowledge development in one or more of their particular areas of specialization within the discipline.
PhD students must take any one of the following: ANTH 690A, ANTH 690C, ANTH 690D, ANTH 690E, ANTH 690F.

ANTH 690C Units: 1.5
Specialized Directed Study in Inequality, Culture, Health

ANTH 690D Units: 1.5
Specialized Directed Study in Evolution and Ecology

ANTH 690E Units: 1.5
Specialized Studies in Method and Theory

ANTH 690F Units: 1.5
Specialized Directed Study in Visual Anthropology and Materiality

ANTH 693 Units: 3.0
PhD Candidacy Examinations
Students enroll in ANTH 693 while completing their candidacy requirements. In addition to completing their coursework, PhD students must fulfill the language requirement, pass their comprehensive examinations, and defend their dissertation proposal in order to advance to candidacy.
Grading: INP, COM, N, F.

ANTH 699 Units: 20
PhD Dissertation
Prerequisite(s): ANTH 693.
Grading: INP, COM, N, F.

ART

Visual Arts
Department of Visual Arts
Faculty of Fine Arts

ART 500 Units: 9.0
First Year Drawing

ART 501 Units: 9.0
Second Year Drawing

ART 511 Units: 9.0
First Year Painting

ART 512 Units: 9.0
Second Year Painting

ART 521 Units: 9.0
First Year Sculpture

ART 522 Units: 9.0
Second Year Sculpture

ART 541 Units: 9.0
First Year Photography

ART 542 Units: 9.0
Second Year Photography

ART 551 Units: 9.0
First Year Digital Media

ART 552 Units: 9.0
Second Year Digital Media

ART 570 Units: 3.0
Directed Study
An independent study course normally taken during the term between the student's first and second year.

ART 580 Units: 6.0
First Year Seminar

ART 581 Units: 6.0
Second Year Seminar
The graduate seminar meets weekly, serving as a forum for active investigation of contemporary art practices as they pertain to student and faculty research areas. The seminar also serves as an occasional forum for visiting artists and critics. Students are expected to make presentations based on their work and research, to participate actively in discussion and to demonstrate their critical and analytical abilities in dealing with the material presented.

ASTR

Astronomy
Department of Physics and Astronomy
Faculty of Science

ASTR 501 Units: 1.5
Stellar Interiors and Evolution
The physics of stars and stellar explosions. Interior structure and evolution including the origin of the elements. Stellar properties as a function of mass and metallicity. Computational simulations of stars and stellar physics processes, such as mixing, and corresponding observables.

ASTR 503 Units: 1.5
The Interstellar Medium
Spectral line formation and notation. Processes in the interstellar medium including collisional excitation/ionization, line transfer effects (e.g., resonance and fluorescence), continuum and recombination processes. The theory of photoionized regions. Dust and metals - formation, measurement and chemistry. The application of these physical processes to current research topics, including the composition of the Milky Way and Local Group galaxies and the interstellar media of high redshift galaxies.

ASTR 504 Units: 1.5
A Theoretical Perspective on Galaxies
The current theoretical framework for understanding the formation and evolution of galaxies and galaxy systems. Topics may include the origin of the initial density perturbations during inflation, the hierarchical clustering paradigm, the physics driving the evolution of cosmic baryons, and the latest tools used by theorists to study structure formation.

ASTR 505 Units: 1.5
An Observational Perspective on Galaxies
The formation and evolution of galaxies from a modern research perspective. Topics may include the observed properties of galaxies, the growth of galaxies from initial conditions, the development of galactic scaling relations, the relationship between galaxies and large-scale structure and the physical evolution of galaxies.
ASTR 506 - Units: 1.5
Stellar Populations
The properties of star clusters and their use in improving our understanding of stellar evolutionary theory. The use of star clusters and theoretical stellar models to study the formation of galaxies in the early Universe in addition to the chemical and dynamical evolution of galactic systems.

ASTR 507 - Units: 1.5
Stellar Archaeology
The properties of stars and stellar populations in the Milky Way Galaxy. Topics may include stellar chemistry and the analysis of model atmosphere, stellar and cluster kinematics, astronomical instrumentation, and big data surveys.

ASTR 508 - Units: 1.5
Cosmology
Modern research problems in cosmology. Topics may include the measurement of cosmological parameters, universal expansion, large-scale structure, big bang nucleosynthesis and the cosmic microwave background.

ASTR 511 - Units: 1.5
Advanced Topics in Astronomy
Advanced topics covering research in the fields of extra-galactic and stellar astronomy.
Note: May be taken more than once for credit in different topics.

ASTR 561 - Units: 1.5
Student Seminar (MSc)
Seminar participants take turns hosting the meeting, typically by presenting a paper on recent or ongoing astronomical research. This is a continuing course that is taken throughout the MSc program, but credit is not granted until completion of the program.
Grading: INP, COM, N, F.

ASTR 580 - Units: 1.0-3.0
Directed Studies
Notes:
- May be taken more than once for credit in different topics.
- Pro Forma required.

ASTR 661 - Units: 1.5
Student Seminar (PhD)
Seminar participants take turns hosting the meeting, typically by presenting a paper on recent or ongoing astronomical research. This is a continuing course that is taken throughout the initial part of the PhD program, with credit granted on successful completion of the PhD Candidacy Examination PHYS 693.
Grading: INP, COM, N, F.

BCMB 501 - Units: 1.0
Formerly: BCMB 531
Essentials of Scientific Writing
Exploration of the techniques and strategies of effective scientific writing for knowledge dissemination, grant submission, and peer-reviewed journals.
Note: Credit will be granted to only one of BCMB 501, BCMB 531.

BCMB 502 - Units: 1.0
Journal Club I
Journal club designed to introduce students to relevant biochemical and microbiological research literature. Selected papers will encompass the following research themes: (1) molecular pathogenesis, (2) gene expression and signaling, (3) diagnostics, therapeutics and vaccines, (4) protein chemistry, structure and function, and (5) proteomics.

BCMB 508 - Units: 0
Research Seminar
Requires attendance and participation at all departmental seminars, and the formal presentation of the research that comprises the major portion of the student’s MSc thesis in biochemistry or microbiology, or the major portion of the currently completed and proposed research for students intending to transfer to the PhD program.
Grading: INP, COM, N, F.

BCMB 589 - Units: 0.5-1.5
Special Topics in Biochemistry or Microbiology
Instruction in a specific or highly specialized aspect of biochemistry or microbiology not otherwise offered in the department’s graduate programs.
Note: May be taken more than once for credit in different topics to a maximum of 1.5 units.

BCMB 602 - Units: 0
Journal Club II
Journal club designed to introduce students to relevant biochemical and microbiological research literature. Selected papers will encompass the following research themes: (1) molecular pathogenesis, (2) gene expression and signaling; (3) diagnostics, therapeutics and vaccines; (4) protein chemistry, structure and function; and (5) proteomics.
Prerequisite(s): BCMB 502.
Grading: INP, COM, N, F.

BCMB 680 - Units: 0
Advanced Research Seminar
Requires attendance and participation at all departmental seminars, and the formal presentation of the research that comprises the major portion of the student's PhD thesis work in biochemistry or microbiology.
Prerequisite(s):
- One of BCMB 580, BCIOC 580, MICR 580, or
- permission of the department.
Grading: INP, COM, N, F.

BCMB 693 - Units: 3.0
PhD Candidacy Examination
Students enroll in BCMB 693 upon provisional transfer to the BCIOC or MICR PhD program and remain enrolled until all candidacy requirements are complete.
Grading: INP, COM, N, F.

BIOL 509B - Units: 1.5
Neurobiology: Molecules to Behaviour
Notes:
- Credit will be granted for only one of BIOL 509B, BIOL 409A, BIOL 367.
- A combined undergraduate and graduate course.
- Please contact instructor for more information.

BIOL 509D - Units: 1.5
Ion Channels: Structure and Function
Electrical signals in neurons are produced by voltage-gated and ligand-gated ion channels. Any disturbance in the function of ion channels can lead to major neurological disorders. This course will allow students to learn the structure and function of some of the major voltage- and ligand-gated ion channels. Mechanisms of ligand binding, gating and ion selectivity will be covered. The structure of the course will be based primarily on critical discussion of research papers.
BIO 513 Units: 1.5
Developmental Biology
Cellular and molecular mechanisms underlying animal development: fertilization, gastrulation, body axis formation and patterning, formation of the eye, nervous system, neural crest, limb, germ cells and gonads. Emphasis on human developmental disorders, experimental design and hypothesis testing.
Notes:
• Credit will be granted for only one of BIO 513, BIO 309.
• A combined undergraduate and graduate course.
• Please contact instructor for more information.

BIO 516 Units: 1.5
Neuroethology
Examination of the neural basis of behaviour. Insights into the neuronal organization of behaviour through examination of neural solutions that have evolved in animals to solve problems encountered in their particular environments. Examples in individual species will be used to illustrate how neuronal systems integrate information to shape behaviour in a real-world context. Critical evaluation of research papers and seminar presentations based on the primary literature will be emphasized.
Notes:
• Credit will be granted for only one of BIO 516, BIO 448.
• A combined undergraduate and graduate course.
• Please contact instructor for more information.

BIO 521 Units: 1.5
Advanced Topics in Marine and/or Freshwater Algae
Phytoplankton eco-physiology, and connections between phytoplankton physiology and broad oceanographic issues, such as the dynamics of nutrient cycling, carbon export, paleoceanographic proxies, ocean warming and marine ecosystem changes.

BIO 522 Units: 1.5
Sensory Biology
Cellular and molecular mechanisms underlying sensory systems: sensory receptor coding logic, signal transduction, neuronal circuitry, developmental biology, comparative analysis of model organisms, related clinical disorders and therapeutic strategies. Focus placed on recent advances in the primary literature and on promoting skills for developing hypotheses and designing experiments.
Notes:
• Credit will be granted for only one of BIO 522, BIO 404.
• A combined undergraduate and graduate course.
• Please contact instructor for more information.

BIO 535 Units: 1.5
Topics in Evolutionary Biology
A lecture and discussion course dealing with the processes of evolution. Topics vary, and may include one or more of the following: microevolutionary and macroevolutionary processes, speciation mechanisms, phylogeny reconstruction, molecular evolution, genetic basis of morphological change. Areas of current controversy will be explored.
Note: Credit will be granted for only one of BIO 535, BIO 555.

BIO 536 Units: 1.5
Human Molecular Genetics
An advanced study of the supramolecular organization, structures and functions of the human genome, and their implications in genetic diseases, including cancer. Topics will include current advances in genomics, animal models of diseases, molecular pathology and gene therapies.
Notes:
• Credit will be granted for only one of BIO 536, BIO 436.
• A combined undergraduate and graduate course.
• Please contact instructor for more information.

BIO 538 Units: 1.5
Also: FORB 538
Nutrient Cycling and Prokaryotes
An introduction to prokaryotes (bacteria and archaea) and their role in nutrient cycling in forests, lakes and oceans. Diversity and evolution of populations and communities of prokaryotes and their role in the major biogeochemical cycles: carbon, nitrogen, sulfur. Genetic, biochemical, physiological and ecological aspects of processes such as nitrogen fixation and methanogenesis; design of experimental approaches to assess cycling of elements in forests, lakes and oceans by prokaryotes.
Notes:
• Credit will be granted for only one of BIO 538, BIO 438, FORB 538.
• A combined undergraduate and graduate course.
• Please contact instructor for more information.

BIO 540 Units: 1.5
Molecular Epidemiology
Basic principles and applications of molecular epidemiology in epidemiological research on infectious and chronic diseases as well as risk factors in human populations. An overview of terminology and definitions, the use of statistics, and ethical consideration.
Notes:
• Credit will be granted for only one of BIO 540, BIO 439.
• A combined undergraduate and graduate course.
• Please contact instructor for more information.

BIO 544 Units: 1.5
Molecular Evolution
Using population genetic and evolutionary principles to understand how and why genes and genomes change, and to reconstruct the evolutionary history of genes, genomes, and organisms.
Notes:
• Credit will be granted for only one of BIO 544, BIO 435.
• A combined undergraduate and graduate course.
• Please contact instructor for more information.

BIO 547 Units: 1.5
Classical Genetics
An examination of the basic principles of genetics and the genetic basis of evolution. Topics include: Mendelian inheritance; population genetics; linkage and recombination; linkage disequilibrium; selection; models of evolution; the Hardy-Weinberg principle; multilocus evolution; molecular evolution; and animal models of human disease.

BIO 550 Units: 1.0-6.0
Directed Studies
Notes:
• May be taken more than once in any of the below areas under the appropriate faculty member.
• Pro Forma required.

BIO 550A Units: 1.0-6.0
Evolution
Notes:
• May be taken more than once for credit in different topics with permission of the department.
• Pro Forma required.

BIO 560 Units: 1.0
Annual Biology Graduate Symposium
Required of all graduate students every year of their degree program except by permission of the department. Shall be treated, in its grading, as the thesis or the dissertation and shall be given one unit of credit upon completion.
Grading: INP, COM, N, F.

BIO 561 Units: 1.5 Hours: 3-0-1
Fisheries Ecology and Management
An examination of the basic principles of fisheries ecology and population dynamics and how they are used as the basis for stock assessment and fisheries management. Topics include: current issues in BC, Canadian and global fisheries, growth, mortality, reproduction and recruitment, stock-recruitment and age-structured fisheries models; fisheries management tactics and strategies.
Prerequisite(s): Permission of the department.

BIO 563 Units: 1.5
Also: STAT 563
Topics in Applied Statistics
Survival analysis, generalized linear models, multivariate normal models, resampling methods, nonparametric and robust methods, meta-analysis, miscellaneous techniques.
Note: Joint with STAT 563.
Introduction to issues in research ethics and professionalism. Literature, what constitutes good management research. Literature, the historical development of the management philosophy of science with respect to the management academy with respect to international business practice, international management and organization. Covers what constitutes good management research.

BUS 603 Units: 1.5
Strategy
Examines the current state of knowledge in strategic management. Topics may include the sources of competitive advantage, the role of industry evolution and technology, the organization of top management, and managerial decision-making and cognition. Introduces alternative theoretical perspectives and available empirical evidence related to these topics.

BUS 604 Units: 1.5
Business and Sustainability
Changing societal and ecological dynamics, from global to local levels, are rapidly shaping new landscapes for the management of organizations - affecting their institutional contexts, interactions with an expanding range of stakeholders, strategic priorities and operational realities. Rethinking the role of business in society has added new concepts to organization theory, including corporate social responsibility, ecological sustainability and resilience, triple-bottom line management, natural capital, shared or sustainable value creation and social entrepreneurship.

BUS 605 Units: 1.5
Comparative Human Resource Management
Focuses on human resource management (HRM) practices and outcomes in international organizations, as well as identifies causal factors accounting for differences across nations in HRM structures, practices and outcomes.

BUS 606 Units: 1.5
Micro Organizational Behaviour
Focuses on the behaviour of individuals and groups in organizations. Introduces several key topics in the field and aims for a critical analysis of each topic to develop a framework for understanding the breadth and depth of the research done to date in each topic and to identify the gaps in the literature. Covers the major theories and empirical research, including conceptual and methodological issues.

BUS 607 Units: 1.5
Macro Organizational Theory
Introduces the major schools of thought in organization and management theory. Considers the development of the field, major and foundational works in these schools of thought, and provides a cognitive map with which to evaluate contemporary research and debates. Provides understanding of the strengths and weaknesses of each major perspective.

BUS 640 Units: 1.5
Research Methods Fundamentals
Builds a strong foundation for PhD studies in the field of international management and organization. Covers what the academy is and the academic’s role in the Academy as well as in the greater societal context, the role of the academy with respect to international business practice, philosophy of science with respect to the management literature, the historical development of the management literature, what constitutes good management research.
### BUS 690 - CD 524

#### BUS 690  
**Units:** 1.5-4.5  
**Directed Studies for Business PhD Program**  
The content, credit value and method of evaluation must be approved by the PhD Program Director as well as the instructor offering the area of individual study prior to registration.  
**Notes:**  
- May be taken more than once for credit in different topics.  
- Pro Forma required.

#### BUS 693  
**Units:** 3.0  
**Doctoral Candidacy Exam**  
PhD students write a Candidacy Exam made up of three components including two written content exams on core subject material and a critical review of an empirical research manuscript. These written responses will be combined with an oral examination to assess whether the student has reached a sufficient level of expertise to allow him or her to proceed to the next stage of the program.  
**Grading:** INP, COM, N, F.

#### BUS 694  
**Units:** 0  
**Dissertation Proposal Defence**  
**Grading:** INP, COM, N, F.

#### BUS 695  
**Units:** 0.5-4.5  
**Special Topics in Business Administration**  
The content, credit value and method of evaluation must be approved by the PhD Program Director.  
**Note:** May be taken more than once for credit in different topics to a maximum of 20 units.  
**Grading:** INP, COM, N, F.

#### BUS 699  
**Units:** 15  
**PhD Dissertation**  
**Prerequisite(s):** BUS 693.  
**Grading:** INP, COM, N, F.

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### CD 501  
**Units:** 1.5  
**Anchoring a Change Agenda: Foundations**  
Grounds students in a solid understanding of the multiple historical, theoretical and conceptual frameworks of the role of civil society and the social economy in advancing progressive economic, political and social change, including the economics of social justice. The powerful intersection of theory and practice will be examined and critically assessed in the context of the capacity of co-operatives, non-profits and community development organizations to respond to key contemporary societal issues, global trends, and to consider implications for the future.  
**Prerequisite(s):**  
- Admission to MA program in Community Development;  
- permission of the program.

### CD 504  
**Units:** 1.5  
**Practices and Perspectives on Forging Change**  
The ideologies, assumptions, and practices of diverse models of change that engage citizens, organizational and institutional stakeholders for social benefit are explored. Introduces a range of models, their strengths, limits and applications with particular focus on governance, power, influence and socioeconomic innovation. Students analyze and assess the relevance and value to their fields of interest, whether community economic development, co-operatives or nonprofits. Uses a range of readings, case studies and practice experience drawing upon Canadian and international settings.  
**Note:** Credit will be granted for only one of CD 504, CD 530.

### CD 505  
**Units:** 1.5  
**Community-Based Research: Foundations**  
Explores the values, goals and assumptions of community-based research and its methodologies. Participatory action research methods and lessons learned from best practices will be introduced. Students will experience a variety of approaches and develop the capacity to evaluate appropriate methods and their application for practice settings. This course will help shape the student’s major project.

### CD 506  
**Units:** 1.5  
**Enterprise Development for Community Benefit**  
Analyzes the strategy, models and processes of planning and decision making for developing enterprises that link social and economic benefit to the community. Students will develop a clear understanding of key concepts within financial, information and community technologies, leadership and community capacity building elements that accompany organizational and community enterprise development. Stream-specific readings and practices will complement the core content.

### CD 509  
**Units:** 1.5  
**Developing Capacities to Lead and Manage in the Non-Profit Sector**  
Focuses on developing the capacities of strategic planning, strategy and program management, resource generation, financial and human resource management, performance, information and communication technology, communications management, and ensuring accountability to multiple stakeholders. Students will develop an in-depth understanding of leading edge management frameworks and examine their relevance to leading and managing in the community sector.

### CD 510  
**Units:** 1.5  
**Leadership, Management and Governance within Organizations**  
Develops the competencies required to effectively lead and manage organizations from the ‘inside’, focusing on leadership capacities, human resources (staff, boards and volunteers), governance, internal and external stakeholder relations. Through a blend of theory, practice and experiential simulations, students integrate their learning as well as appreciate the unique dimensions of co-operatives, social enterprises and non-profit organizations.  
**Note:** Credit will be granted for only one of CD 510, CD 531.

**Prerequisite(s):**  
- Admission to MA program in Community Development;  
- permission of the program.

### CD 512  
**Units:** 1.5  
**Program and Project Design, Management and Evaluation**  
Examines the various perspectives and approaches to program and project design, management and evaluation. Highlights the analytical activities and decisions involved in effective design, planning, implementation, reporting, and evaluation focusing on innovative and practical tools and processes that ensure effective outcomes and accountability. Attention will be paid to managing the complexity of multiple and collaborative projects and programs.

### CD 518  
**Units:** 1.5  
**Citizen Participation and Democratic Governance**  
Introduces students to concepts of citizenship, democracy and governance and addresses different histories and forms of democracy. The meanings of citizenship and its relationship to identity, engagement and participation are discussed. Explores different models of governance and reviews governance practices and structures at multiple levels in different jurisdictions. Also investigates the role of accountability in democratic governance, including forms and techniques of accountability.

### CD 522  
**Units:** 1.5  
**Understanding and Mainstreaming Gender**  
Considers a range of conceptual and practical issues faced in the quest for a gender-just society. Topics include: definition and understanding of gender, gender based violence, gender in institutions as well as the creation of gender-sensitive environments. Course material and online discussions encourage critical analysis of diverse contemporary debates and perspectives. Also includes exercises and questions to stimulate critical thinking and reflection upon gender attitudes and perceptions.

### CD 524  
**Units:** 1.5  
**Leadership and Organizational Development for Communities**  
Explores leadership beliefs, values, and attitudes, and analyzes perspectives in shaping leadership in civil society, community development and the social economy. Introduces management, assessment, concepts and tools for developing strategic priorities and planning frameworks for organizations and communities. Includes scenario based exercises set in a variety of practice contexts relevant to students’ experience and systems.  
**Note:** Credit will be granted for only one of CD 524, CD 502, CD 503, CD 530.

**Prerequisite(s):**  
- Admission to MA program in Community Development;  
- permission of the program.
CD 525 Units: 1.5
Managing Organizations, Systems and Community Transformations
Develops key competencies for personal, group, organizational and community leadership in teamwork, facilitation, presentation skills, negotiation, conflict resolution, group dynamics and collaboration. Examines systemic factors that encourage and challenge innovation. Analysis of cases that demonstrate successful scaling, practices or particular innovations.
Note: Credit will be granted for only one of CD 525, CD 511, CD 513, CD 531.
Prerequisite(s):
• Admission to MA program in Community Development; or
• permission of the program.

CD 526 Units: 1.5
Agenda for Social Change: Moving Forward
Surveys the key leverage points for exercising strategic leadership for addressing key trends at the local and regional level. Exemplary practice and understanding of key policy innovations are drawn from local and international sources. Provides an opportunity for students to engage in generative dialogue to explore learning that strategically advances civil society, social economy and strengthens communities. Understanding local and international key policy innovations are linked with the formulation of recommendations for action for moving forward.
Note: Credit will be granted for only one of CD 526, CD 517, CD 520.
Prerequisite(s):
• Admission to MA program in Community Development; or
• permission of the program.

CD 530 Units: 1.5
Systems Thinking for Social Change
Explains systems thinking, its importance, and its relevance to students' work environments. Introduces models, their strengths, limitations and applications with a focus on governance, power, economic influence and social innovation. Students analyze and assess the relevance and value of systems thinking to their fields of interest, whether non-profits, community economic development or co-operatives.
Note: Credit will be granted for only one of CD 530, CD 504, CD 524.

CD 531 Units: 1.5
Leadership and Transformation
Presents three distinct but interrelated topics: introduces students to the concepts of leadership, governance and transformation, analyzes and synthesizes theories about leadership and change; and introduces interaction between governments and society. Students identify how a shift in behaviour or practice within a complex organization can produce significant changes in their organization and the communities they serve.
Note: Credit will be granted for only one of CD 531, CD 510, CD 525.

CD 539 Units: 1.5
Directed Studies
An international or local exchange, a study tour, self-directed reading, or an innovative personal learning design. Must be applicable to the field of study. Primary consideration will be given to its role and relevance in deepening skills and knowledge to strengthen the capacity of the student to provide leadership in the future.
Note: May be taken more than once for credit in different topics with permission of the faculty.

CD 591 Units: 1.5
Selected Topics Course
A study of selected topics drawn from the current literature and practices in the social economy or related fields.
Note: May be taken more than once for credit in different topics with permission of the faculty.

CD 596 Units: 4.5
Group Project
A substantial analysis of a management, policy or program problem in the community development sector, which may be done for a client. The Group Project is prepared under the supervision of a faculty member in the School of Public Administration and must be both practical and academically rigorous. A written project report is defended in an oral examination.
Grading: INP, COM, N, F.

CD 598 Units: 4.5
Master’s Project
A substantial analysis of a management, policy or program problem in the community development sector, which may be done for a client. The Master’s Project is prepared under the supervision of a faculty member in the School of Public Administration and must be both practical and academically rigorous. A written project report is defended in an oral examination.
Grading: INP, COM, N, F.

CD 599 Units: 1.5
Curatorial Planning and Practice
Explores the evolving concept and implications of an holistic approach to visitor engagement in museums and other cultural heritage institutions, and focuses on how practices of visitor engagement and evaluation strategies are tied to contemporary cultural curatorial theory and practice.

CH 561 Units: 1.5
Social Engagement
Explores the profound social changes that are reshaping the nature and purposes of museums and other cultural heritage organizations in a pluralistic society. Considers the implications for all aspects of their specialized functions with a particular focus on how such organizations serve as dynamic social spaces for community engagement and action.
Notes:
• Credit will be granted for only one of CH 561, AHVS 488W.
• A combined undergraduate and graduate course.

CH 562 Units: 1.5
Curatorial Planning and Practice
Considers how traditional concepts of curatorial practice have shifted significantly in the face of more democratic relations with community, more subjective perspectives of knowledge, and increasing emphasis on the museum’s social and educative roles. Explores the nature and scope of contemporary critical curatorial theory and practice, and focuses on the ways in which curators engage with cultural heritage resources, develop sustainable collections, and generate and share associated knowledge to meet the needs of diverse communities.
Notes:
• Credit will be granted for only one of CH 562, AHVS 488X.
• A combined undergraduate and graduate course.

CH 563 Units: 1.5
Visitor Experiences
Explores the evolving concept and implications of an holistic approach to visitor engagement in museums and other cultural heritage institutions, and focuses on how practices of visitor engagement and evaluation strategies are tied to contemporary cultural curatorial theory and practice.
Notes:
• Credit will be granted for only one of CH 563, AHVS 488Y.
• A combined undergraduate and graduate course.

CH 570 Units: 1.5
Heritage Conservation In Context
Addresses the complex range of principles and practices that influence heritage preservation and conservation planning and decision-making. The implications of international and national charters, principles, standards and guidelines, are discussed, along with legal, programmatic and financial incentives and constraints.
Notes:
• Credit will only be granted for one of CH 570, AHVS 489K, HA 489K.
• A combined undergraduate and graduate course.
CH 571  Units: 1.5  
**Determining Significance of Heritage Resources**
Focuses on the definition of the heritage value or significance of a historic place or resource as a key step in the management of cultural heritage resources. It explores the range of historical aesthetic, social and scientific values that establish the character-defining elements of historic resources, including buildings, structures, historic districts and cultural landscapes. Various methods of inventory and evaluation are discussed along with their roles in guiding subsequent conservation planning and decision-making.

**Notes:**
- Credit will only be granted for one of CH 571, AHVS 489C, HA 489C.
- A combined undergraduate and graduate course.

CH 572  Units: 1.5  
**Heritage Conservation Planning**
Focuses on approaches to planning and heritage conservation decision-making, and discusses the components of the heritage conservation planning process, including alignment with local and regional planning priorities, community involvement and consultation, the acquisition and integration of technical and regulatory information and professional expertise, and the integration of planning in the long-term management of heritage resources.

**Notes:**
- Credit will only be granted for one of CH 572, AHVS 489L, HA 489L.
- A combined undergraduate and graduate course.

CH 588  Units: 1.5  
**Special Studies in Museum Studies**
May be taken in conjunction with a Cultural Resource Management course in the AHVS 488 series with permission of the Program Adviser.

**Note:** This course may be taken more than once for credit in different topic areas.

**Prerequisite(s):** Permission of the program.

CH 589  Units: 1.5  
**Special Studies in Heritage Conservation**
May be taken in conjunction with a Cultural Resource Management course in the AHVS 489 series with permission of the Program Adviser.

**Note:** This course may be taken more than once for credit in different topic areas.

**Prerequisite(s):** Permission of the program.

CH 591  Units: 1.5  
**Practicum in Cultural Heritage**
A placement in a cultural heritage setting, designed to build knowledge and skills in a specialized area of practice.

**Grading:** INP, COM, F, N.

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**CHEM**

**Chemistry**  
Department of Chemistry  
Faculty of Science

CH 505  Units: 0.5  
**Research Methods and Professional Development in Chemistry**
Introduction to professional development and best practices in research. Topics may include writing, ethics, the publication and review process, intellectual property, time and data management, record keeping, the chemical literature.

**Grading:** INP, COM, N, F.

CH 509  Units: 1.0  
**Seminar**
Requires regular attendance at departmental seminars throughout the student's program, annual participation in the Graduate Student Research Days and presentation of a research seminar in term 4 or 5 of MSc students' programs, or in term 10 or 11 of PhD students' programs.

**Grading:** INP, COM, N, F.

CH 511  Units: 1.5  
Also: CHEM 411  
**Advanced Instrumental Analysis**
A discussion of electronic data acquisition and manipulation as used in modern chemical instrumentation.

**Notes:**
- Credit will be granted for only one of CHEM 511, CHEM 411.
- A combined undergraduate and graduate course.

CH 521  Units: 1.5  
**Advanced Inorganic Chemistry**
Advanced topics in inorganic chemistry from across the periodic table, building on principles established in 222, 324 and 353. Topics may include: main group organometallics, novel structures and reactivity, catalysis, inorganic polymers, zeolites, fullerenes, metal-metal and metal-ligand multiple bonding, bioinorganic chemistry, metal clusters, or chemistry of the lanthanides and actinides.

**Note:** Credit will be granted for only one of CHEM 521, CHEM 524, CHEM 526 (if taken in the same topic).

CH 523  Units: 1.5  
**Organometallic Chemistry**

CH 526  Units: 1.5  
**Topics in Advanced Inorganic Chemistry**

**Notes:**
- May be taken more than once for credit in different topics.
- Pro Forma required.

CH 533  Units: 1.5  
**Organic Synthesis**

CH 537  Units: 1.5  
**Biological and Medicinal Chemistry**
An introduction to medicinally important biological systems and the small molecules that perturb them. Topics will include: chemical aspects of proteomics, biological target identification, mechanisms of action for important drugs, lead identification and development, and enzyme inhibitor design.
CHEM 577 Units: 1.5
Also: CHEM 477
Computational Chemistry
The benefits and limitations of applying different computational models to chemical phenomena, accounting for the relevant length and time scales and including the appropriate molecular behaviours.
Notes:
• Credit will be granted for only one of CHEM 577, CHEM 477.
• A combined undergraduate and graduate course.

CHEM 578 Units: 1.5
Also: CHEM 478
Industrial Chemistry
A comparative discussion of a number of chemical industries and the details of the processes.
Notes:
• Credit will be granted for only one of CHEM 578, CHEM 478.
• A combined undergraduate and graduate course.

CHEM 590 Units: 0.5-3.0
Directed Studies
Notes:
• May be taken more than once for credit in different topics.
• Pro Forma required.

CHEM 599 Units: 15.0
MSc Thesis
Grading: INP, COM, N, F.

CHEM 633 Units: 1.5
Topics in Advanced Organic Chemistry
Notes:
• May be taken more than once for credit in different topics.
• Pro Forma required.

CHEM 645 Units: 1.5
Also: CHEM 475
Electrochemistry and its Applications
Introduction to equilibrium and kinetics of electrochemical processes including their applications in energy and analytical chemistry.
Notes:
• Credit will be granted for only one of CHEM 645, CHEM 475.
• A combined undergraduate and graduate course.

CHEM 647 Units: 1.5
Materials Science

CHEM 670 Units: 1.5
Property-Directed Synthesis Discussion
Note: May be taken more than once for credit in different topics.

CHEM 676 Units: 1.5
Polymer Science

CHEM 680 Units: 1.5
Reactivity, Dynamics and Spectroscopy Discussion
Note: May be taken more than once for credit in different topics.

CHEM 693 Units: 3.0
PhD Candidacy Examination
Students enrol in 693 concurrently with 699 until 693 is passed. If the candidacy examination cannot be completed until the following term, an INP (in progress) grade will be entered.
Grading: INP, COM, N, F.

CHEM 699 Units: 37.5-39.0
PhD Dissertation
Pre- or Corequisite(s): CHEM 693.
Grading: INP, COM, N, F.

CIV 510 Units: 1.5
Industrial Metabolism
Methods of material and substance flow analysis in the context of technology and environmental change. Topics include: evolution of technology; environmental footprints, impacts and boundaries; industrial / societal use of dominant elements and compounds; critical metals; resource decoupling; transformation of global infrastructure systems.

CIV 511 Units: 1.5
Methods in Life Cycle Assessment
A variety of methods and applications of life cycle assessment (LCA) including process-based methods and input-output (IO) techniques. Topics include: consequential and attributional LCA; streamlined LCA; life cycle sustainability assessment; environmentally extended IO analysis; multi-regional and multi-scale IO analysis; applications of environmental LCA in product design and policy.

CIV 512 Units: 1.5
Industrial Symbiosis and Recycling
Reducing costs, adding value and improving the environment through the sharing of services, utility, and by-products between industries. The historical development and future prospects of industrial symbiosis at the eco-park, municipal and regional scales. Advances in waste management, recycling technologies and limits to the circular economy.

CIV 513 Units: 1.5
Sustainable Cities
Urban metabolism and sustainable infrastructure development. Design of the built environment based on energy and material flows through cities. Sustainable transportation, green buildings, urban climatology, vegetation, water systems and energy supply in urban neighbourhood designs. Measuring urban metabolism to account for greenhouse gas emissions and other environmental impacts of cities.

CIV 540 Units: 1.5
Uncertainty in Water Resources
Basic and advanced methods in uncertainty analysis in water resources modelling. Bayesian statistics, fuzzy sets and fuzzy numbers are used with applications to water resources. Typical methods used in physically-based modelling including GLUE.

CIV 541 Units: 1.5
Hydrologic Modeling
Analytical, numerical, statistical and physical approaches from local to global scales including surface water-groundwater interactions; analysis and prediction; discuss different approximations of hydrologic process equations and limitations and uncertainty associated with different process representations.

CIV 542 Units: 1.5
Environmental Modeling
Basic and advanced methods in spatial statistics for point, area and continuous variables. All the levels (from visual to analytical) of possible spatial analysis techniques for each type of variable and applications in environmental modelling are used to illustrate the concepts.

CIV 545 Units: 1.5
Groundwater Hydrology

CIV 546 Units: 1.5
Urban Water Systems
The planning and management of urban water systems; handling of wastewaters; drainage and flood prevention; urban agriculture and nutrient recycling; and recreational water uses. All elements of urban water infrastructure from water source, pumping, storage, transmission and distribution, to the hydraulics and network design of sewerage and drainage. Maintenance and repair of pipe networks, adaptation to climate change and sustainable approaches such as low impact development, grey-water systems, rainwater harvesting.

CIV 547 Units: 1.5
Water Treatment Processes
Theory and application of physical, chemical and biological processes for the treatment of water and wastewater. Topics include sedimentation, coagulation, filtration, and disinfection, activated sludge, biological nutrient removal, and anaerobic processes for waste treatment. Lecture material is supported by laboratory experiments.

CIV 550 Units: 1.5
Green Building Design
Definition of green building, design and construction concepts, site selection, materials and origin, water resource, energy use and generation, retrofit and recycling, indoor environment, occupant behaviour, durability, life cycle analysis, net-zero buildings, green building rating systems.

CIV 551 Units: 1.5
Advanced Building Science
Scope and definition, heat-air-moisture transport mechanisms, hygrothermal properties, test methods, climate characterization, moisture management, durability index, energy efficient building envelopes, whole building energy performance, application of numerical simulation tools, forensic investigations.
CIVE 552 - CSC 510

CIVE 552 Units: 1.5
Sustainable Construction
Sustainability in urban and remote communities, case studies to highlight some of the recent trends in sustainable construction in North America and around the globe. Topics for case studies will include (but not limited to): light-gauge steel technology for mass construction, insulated stay-in-place formwork technology for mass construction, shotcrete, precast and prestressed construction, and rammed earth construction. Will also include an introduction to use of BIM for managing construction projects.

CIVE 553 Units: 1.5
Advanced Mechanics of Materials
This mechanics of materials course covers advanced topics including beams on elastic foundations, unsymmetrical bending, curved beams, shear flow and torsion in closed and open sections, elastic stability and shells of revolution.

CIVE 556 Units: 1.5
Advanced Concrete Technology
Microstructure of hydration products and its effect on properties of concrete. Mechanisms and interaction of chemical admixtures and industrial wastes to produce sustainable and durable concrete. Evaluation of fresh and hardened properties of conventional and cement-based composites. Will include a project component focusing on specialized concretes not limited to fiber reinforced concrete, self-consolidating concrete, high strength concrete, lightweight concrete, and carbon negative concrete.

Note: Credit will only be granted for one of CIVE 456, or CIVE 556.

CIVE 557 Units: 1.5 Hours: 3-1.5*-0
Behaviour and Design of Steel Structures
The behaviour and design of trusses, frames, members and connections in steel building and bridge structures. Ultimate strength, stability, and postbuckling are emphasized in topical examples including: plate girders, composite steel/ concrete girders, second-order frame behaviour, high-strength bolted and welded framing connections. Special topics including concrete filling, fire protection and plastic analysis of hollow structural section connections are also covered. Canadian design standards and the Limit States Design concepts are used.

* Indicates a 3-hour laboratory taken by students on alternate weeks.

CIVE 560 Units: 1.5
Urban Transportation Planning
The full suite of skills required in urban transportation planning including travel demand modelling, analysis of transportation land-use interactions, quantification of social and environmental impacts, and project evaluation in the context of broader planning issues and policies. Focus is primarily given to passenger transportation, including walking and cycling, with introduction to freight transport. Theoretical foundations of disaggregate choice models and other techniques in travel demand modeling are introduced.

CIVE 561 Units: 1.5
Urban Transit
Focuses on the planning and operation of public transit systems, covering the hierarchy of modes from buses and bus-rapid transit through streetcars and light-rail to subways and heavy rail. Topics include: factors affecting transit performance and demand, design of networks and mode interchanges; station design; vehicle operations and scheduling; design of transit priority; use of information technology and other innovations in transit planning; project evaluation.

CIVE 580 Selected Topics
Note: May be taken more than once for credit in different topics.

CIVE 590 Units: 1.5
Directed Studies
A wide range of topics will be available.

Note: Pro Forma required.

CIVE 595 Units: 1.5
Sustainability Seminars I
Definitions, practices and approaches to sustainability in local to global civil engineering problems with a focus on case studies and integration across diverse disciplines in this seminar-based class. The specific topics change annually and the course is team-taught by several Civil Engineering faculty members.

Grading: INP, COM, N, F.

CIVE 599 Units: 9.0
MSc Thesis
Grading: INP, COM, N, F.

CIVE 601 Units: 1.5
Research Methods
The laboratory, numerical and analytical methodologies of the various Civil Engineering research groups.

CIVE 601 Selected Topics
Grading: INP, COM, N, F.

CIVE 603 Data Mining
A comprehensive coverage of main Data Mining areas and algorithms. Topics include supervised learning, unsupervised learning, semi-supervised and weakly supervised learning, recommender systems, dimensionality reduction, association analysis. Data-mining software tools will be reviewed and compared.

Note: Credit will be granted for only one of CSC 503, CSC 578D (if taken in the same topic).

CIVE 606 Units: 1.5
Computer Graphics
Provides students with a solid background in interactive, generative graphics techniques and hands-on experience programming a modern high resolution, raster display workstation. Covers the hardware and software structures of modern workstations, raster algorithms and data structures (Bresenham’s line and circle algorithms, polygon clipping, region filling, colour), transformations (two- and three-dimensional translation, scaling, and rotation as matrix operations), viewing and representation of three-dimensional shapes, approximation of curves and shapes, hidden line and hidden surface elimination algorithms.

CIVE 608 Directed Studies
Grading: INP, COM, N, F.

CIVE 693 PhD Dissertation
Grading: INP, COM, N, F.

CSC

Computer Science
Department of Computer Science
Faculty of Engineering

CSC 501 Units: 1.5
Algorithms and Data Models
A comprehensive advanced overview of the main data structures and algorithms for data processing. Topics include the running time of programs, the list data model, the tree data model, the hash-map data model, the graph data model, the relational data model, the processes of data transformation, cleaning, and visualization.

CSC 502 Units: 1.5
Systems for Massive Datasets
Important and recent developments in database technology and systems for big data are covered in detail. Topics include storage technology, algorithms for secondary storage, relational operators implementation, multidimensional data and indexes, data structures for Information Retrieval, distributed data analytics, social network analytics, mining massive datasets.

Note: Credit will be granted for only one of CSC 502, CSC 571.

CSC 503 Data Mining
A comprehensive coverage of main Data Mining areas and algorithms. Topics include supervised learning, unsupervised learning, semi-supervised and weakly supervised learning, recommender systems, dimensionality reduction, association analysis. Data-mining software tools will be reviewed and compared.

Note: Credit will be granted for only one of CSC 503, CSC 578D (if taken in the same topic).

CSC 505 Computer Graphics
Provides students with a solid background in interactive, generative graphics techniques and hands-on experience programming a modern high resolution, raster display workstation. Covers the hardware and software structures of modern workstations, raster algorithms and data structures (Bresenham’s line and circle algorithms, polygon clipping, region filling, colour), transformations (two- and three-dimensional translation, scaling, and rotation as matrix operations), viewing and representation of three-dimensional shapes, approximation of curves and shapes, hidden line and hidden surface elimination algorithms.

CSC 510 Advanced Human-Computer Interaction
Topics of design methodologies, evaluation methodologies (both lab and field studies), human information processing, human movement, cognition, and perception are studied. Introduces students to research methods in HCI, and includes research topics such as: groupware and computer-supported co-operative work; customizable and adaptive systems; small screen, large screen, and tabletop displays; hypertext and multimedia; and virtual and augmented reality.
**CSC 511**  
**Information Visualization**  
An introduction to visualization, or the use of interactive visual representations of data to support human cognition. Principles of visualization design are presented from a human perceptual and cognitive standpoint. Topics include: design, interaction, perception and cognition, evaluation and applications.

**CSC 520**  
**Analysis of Algorithms**  
General techniques for designing and analyzing algorithms; an in-depth examination of several problems and algorithms with respect to their time and space requirements; advanced data structures, sorting and searching, graph algorithms, geometric algorithms; backtracking; NP complete problems; approximation algorithms.

**CSC 522**  
**Graph Algorithms**  
Detailed study, from the algorithmic point of view, of some tractable and intractable graph problems. Some tractable problems are path problems, spanning trees, network flows, matchings, and planarity testing. Some intractable problems are clique, independent set, vertex cover, Hamiltonian cycle, and colouring problems. Various strategies for handling intractable problems are presented including intelligent backtracking, distributed and parallel computing, parameterized complexity, restrictions to graph sub-classes, randomized and approximation algorithms.

**CSC 523**  
**Randomized Algorithms**  
Basic techniques in design and analysis of randomized algorithms: moments and deviations, Markov chains and random walks, martingales, and algebraic techniques. Other topics include: the probabilistic method, random structures and complexity. Applications are selected from: parallel algorithm, routing networks, combinatorial optimization, data structure, approximate solutions to intractable problems, cryptography, pattern matching, and computational geometry.

**CSC 524**  
**Computational Complexity**  
Elements of the theory of computational complexity. Topics covered include: the distinction between tractable and intractable problems; definition of computational models and complexity classes; techniques for comparing the complexity of problems; the classes P and NP; completeness; auxiliary pushdown automata; alternating Turing machines; the polynomial time hierarchy; the classes Polynomial Space and Logarithm Space; probabilistic complexity classes; models of parallel computation; randomized computation.

**CSC 525**  
**Computational Biology Algorithms**  
The design, analysis and implementation of algorithms used in Computational Biology. Typical topics include algorithms for sequence alignment, database searching, gene finding, phylogeny and structure analysis.
CSC 562  Units: 1.5

Distributed Computing
Recent developments and advanced research topics in the area of distributed computing. Topics include: distributed operating systems, interprocess communications, remote procedure calls, network transparency, file server, execution location, and failure transparency, fault tolerant distributed systems, process replication, load balancing, task migration and performance issues, interconnection strategies, network configurations, problem decomposition, distributed updating of multiple copies, global object addressing, centralized and decentralized control mechanisms, reliability and the reconnection problem, and finally case studies of some of the more significant distributed systems.

CSC 564  Units: 1.5

Concurrency
Introduction to the foundations of concurrency theory and the issues of specification and verification of concurrent systems. Topics include models of concurrency such as Petri nets, labelled transition systems, and traces; specification of concurrent systems/programs in formalisms including process algebras, statecharts, Petri nets and temporal logics; verification techniques such as bisimulation and model checking; verification using existing research tools. Case studies will be taken from coordination problems, controller design, communication and security protocols, hardware and user interface design.

CSC 565  Units: 1.5

Massive Data Sets, Scalability and Concurrency
A cross section of topics from computer science disciplines, including databases, operating systems, architecture, programming languages and theory, and considers challenges associated with concurrency from multiple perspectives. Students will be exposed to research involving programming paradigms and software practices for concurrent systems, algorithmic techniques for new paradigms, low level mechanisms for the implementation of practical primitives, applications including data mining and cloud computing, systems support for multicore computation, and pedagogy for concurrency in modern curriculum.

CSC 567  Units: 1.5

Switching, Network Traffic and Quality of Service

CSC 569  Units: 1.5

Wireless and Mobile Networks
The recent developments and advanced research topics in wireless and mobile networks. Topics include: radio propagation models, mobility models, location management, protocols particularly tailored for wireless and mobile networks, and analytical performance evaluation of wireless and mobile networks.

CSC 575  Units: 1.5

Music Retrieval Techniques
A comprehensive advanced overview of the emerging research area of Music Information Retrieval (MIR). Topics include techniques from signal processing, machine learning, information retrieval, human-computer interaction and software engineering that are applied in the design and development of MIR algorithms and systems. Integration of knowledge from different research areas to solve concrete problems.

CSC 578A  Units: 1.5

Topics in Software Applications
Formerly: CSC 578
Notes:
• Credit will be granted for only one of CSC 578A, CSC 578 (if taken in the same topic), CSC 578B (if taken in the same topic), CSC 578C (if taken in the same topic), CSC 578D (if taken in the same topic).
• May be taken more than once for credit in different topics.

CSC 578B  Units: 1.5

Formerly: CSC 578
Notes:
• Credit will be granted for only one of CSC 578B, CSC 578 (if taken in the same topic), CSC 578A (if taken in the same topic), CSC 578C (if taken in the same topic), CSC 578D (if taken in the same topic).
• May be taken more than once for credit in different topics.

CSC 578C  Units: 1.5

Formerly: CSC 578
Notes:
• Credit will be granted for only one of CSC 578C, CSC 578 (if taken in the same topic), CSC 578A (if taken in the same topic), CSC 578B (if taken in the same topic), CSC 578D (if taken in the same topic).
• May be taken more than once for credit in different topics.

CSC 578D  Units: 1.5

Formerly: CSC 578
Notes:
• Credit will be granted for only one of CSC 578D, CSC 578 (if taken in the same topic), CSC 578A (if taken in the same topic), CSC 578B (if taken in the same topic), CSC 578C (if taken in the same topic).
• May be taken more than once for credit in different topics.

CSC 579  Units: 1.5

Overlay and Peer-to-Peer Networking
Focuses on the recent developments and advanced research topics in Layer 3 and above and the control plane of the Internet. Topics include: overlay network architectures, peer-to-peer application models, end-to-end control mechanisms, inter- and intra-domain routing protocols, service provisioning, network measurement, and related best current practices on the Internet.

CSC 581A  Units: 1.5

Topics in Artificial Intelligence
Formerly: CSC 581
Notes:
• Credit will be granted for only one of CSC 581A, CSC 581 (if taken in the same topic), CSC 581B (if taken in the same topic), CSC 581C (if taken in the same topic), CSC 581D (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 581B  Units: 1.5

Formerly: CSC 581
Notes:
• Credit will be granted for only one of CSC 581B, CSC 581 (if taken in the same topic), CSC 581A (if taken in the same topic), CSC 581C (if taken in the same topic), CSC 581D (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 581C  Units: 1.5

Topics in Artificial Intelligence
Notes:
• Credit will be granted for only one of CSC 581C, CSC 581 (if taken in the same topic), CSC 581A (if taken in the same topic), CSC 581B (if taken in the same topic), CSC 581D (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 581D  Units: 1.5

Formerly: CSC 581
Notes:
• Credit will be granted for only one of CSC 581D, CSC 581 (if taken in the same topic), CSC 581A (if taken in the same topic), CSC 581B (if taken in the same topic), CSC 581C (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 582A  Units: 1.5

Topics in Theoretical Computer Science
Notes:
• Credit will be granted for only one of CSC 582A, CSC 582 (if taken in the same topic), CSC 582B (if taken in the same topic), CSC 582C (if taken in the same topic), CSC 582D (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 582B  Units: 1.5

Formerly: CSC 582
Notes:
• Credit will be granted for only one of CSC 582B, CSC 582 (if taken in the same topic), CSC 582A (if taken in the same topic), CSC 582C (if taken in the same topic), CSC 582D (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.
CSC 582C  Units: 1.5  
Formerly: CSC 582  
Topics in Theoretical Computer Science  
Notes:  
• Credit will be granted for only one of CSC 582C, CSC 582 (if taken in the same topic), CSC 582A (if taken in the same topic), CSC 582B (if taken in the same topic), CSC 582D (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 582D  Units: 1.5  
Formerly: CSC 582  
Topics in Theoretical Computer Science  
Notes:  
• Credit will be granted for only one of CSC 582D, CSC 582 (if taken in the same topic), CSC 582A (if taken in the same topic), CSC 582B (if taken in the same topic), CSC 582C (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 583A  Units: 1.5  
Formerly: CSC 583  
Topics in Programming Languages  
Notes:  
• Credit will be granted for only one of CSC 583A, CSC 583 (if taken in the same topic), CSC 583B (if taken in the same topic), CSC 583C (if taken in the same topic), CSC 583D (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 583B  Units: 1.5  
Formerly: CSC 583  
Topics in Programming Languages  
Notes:  
• Credit will be granted for only one of CSC 583B, CSC 583 (if taken in the same topic), CSC 583A (if taken in the same topic), CSC 583C (if taken in the same topic), CSC 583D (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 583C  Units: 1.5  
Formerly: CSC 583  
Topics in Programming Languages  
Notes:  
• Credit will be granted for only one of CSC 583C, CSC 583 (if taken in the same topic), CSC 583A (if taken in the same topic), CSC 583B (if taken in the same topic), CSC 583D (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 583D  Units: 1.5  
Formerly: CSC 583  
Topics in Programming Languages  
Notes:  
• Credit will be granted for only one of CSC 583D, CSC 583 (if taken in the same topic), CSC 583A (if taken in the same topic), CSC 583B (if taken in the same topic), CSC 583C (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 584A  Units: 1.5  
Formerly: CSC 584  
Topics in Numerical Analysis and Operations Research  
Notes:  
• Credit will be granted for only one of CSC 584A, CSC 584 (if taken in the same topic), CSC 584B (if taken in the same topic), CSC 584C (if taken in the same topic), CSC 584D (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 584B  Units: 1.5  
Formerly: CSC 584  
Topics in Numerical Analysis and Operations Research  
Notes:  
• Credit will be granted for only one of CSC 584B, CSC 584 (if taken in the same topic), CSC 584A (if taken in the same topic), CSC 584C (if taken in the same topic), CSC 584D (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 584C  Units: 1.5  
Formerly: CSC 584  
Topics in Numerical Analysis and Operations Research  
Notes:  
• Credit will be granted for only one of CSC 584C, CSC 584 (if taken in the same topic), CSC 584A (if taken in the same topic), CSC 584B (if taken in the same topic), CSC 584D (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 584D  Units: 1.5  
Formerly: CSC 584  
Topics in Numerical Analysis and Operations Research  
Notes:  
• Credit will be granted for only one of CSC 584D, CSC 584 (if taken in the same topic), CSC 584A (if taken in the same topic), CSC 584B (if taken in the same topic), CSC 584C (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 585A  Units: 1.5  
Formerly: CSC 585  
Topics in Hardware and Computer Architecture  
Notes:  
• Credit will be granted for only one of CSC 585A, CSC 585 (if taken in the same topic), CSC 585B (if taken in the same topic), CSC 585C (if taken in the same topic), CSC 585D (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 585B  Units: 1.5  
Formerly: CSC 585  
Topics in Hardware and Computer Architecture  
Notes:  
• Credit will be granted for only one of CSC 585B, CSC 585 (if taken in the same topic), CSC 585A (if taken in the same topic), CSC 585C (if taken in the same topic), CSC 585D (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 585C  Units: 1.5  
Formerly: CSC 585  
Topics in Hardware and Computer Architecture  
Notes:  
• Credit will be granted for only one of CSC 585C, CSC 585 (if taken in the same topic), CSC 585B (if taken in the same topic), CSC 585A (if taken in the same topic), CSC 585D (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 585D  Units: 1.5  
Formerly: CSC 585  
Topics in Hardware and Computer Architecture  
Notes:  
• Credit will be granted for only one of CSC 585D, CSC 585 (if taken in the same topic), CSC 585C (if taken in the same topic), CSC 585B (if taken in the same topic), CSC 585A (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 585E  Units: 1.5  
Formerly: CSC 585  
Topics in Hardware and Computer Architecture  
Notes:  
• Credit will be granted for only one of CSC 585E, CSC 585 (if taken in the same topic), CSC 585D (if taken in the same topic), CSC 585C (if taken in the same topic), CSC 585B (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 585F  Units: 1.5  
Formerly: CSC 585  
Topics in Hardware and Computer Architecture  
Notes:  
• Credit will be granted for only one of CSC 585F, CSC 585 (if taken in the same topic), CSC 585E (if taken in the same topic), CSC 585D (if taken in the same topic), CSC 585C (if taken in the same topic), CSC 585B (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 586A  Units: 1.5  
Formerly: CSC 586  
Topics in Computer Systems and Software  
Notes:  
• Credit will be granted for only one of CSC 586A, CSC 586 (if taken in the same topic), CSC 586B (if taken in the same topic), CSC 586C (if taken in the same topic), CSC 586D (if taken in the same topic), CSC 586E (if taken in the same topic), CSC 586F (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 586B  Units: 1.5  
Formerly: CSC 586  
Topics in Computer Systems and Software  
Notes:  
• Credit will be granted for only one of CSC 586B, CSC 586 (if taken in the same topic), CSC 586A (if taken in the same topic), CSC 586C (if taken in the same topic), CSC 586D (if taken in the same topic), CSC 586E (if taken in the same topic), CSC 586F (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.

CSC 586C  Units: 1.5  
Formerly: CSC 586  
Topics in Computer Systems and Software  
Notes:  
• Credit will be granted for only one of CSC 586C, CSC 586 (if taken in the same topic), CSC 586B (if taken in the same topic), CSC 586A (if taken in the same topic), CSC 586D (if taken in the same topic), CSC 586E (if taken in the same topic), CSC 586F (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of the department.
CSC 586D Units: 1.5
Formerly: CSC 586
Topics in Computer Systems and Software
Notes:
• Credit will be granted for only one of CSC 586D, CSC 586 (if taken in the same topic), CSC 586A (if taken in the same topic), CSC 586B (if taken in the same topic), CSC 586C (if taken in the same topic), CSC 586E (if taken in the same topic), CSC 586F (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 586E Units: 1.5
Formerly: CSC 586
Topics in Computer Systems and Software
Notes:
• Credit will be granted for only one of CSC 586E, CSC 586 (if taken in the same topic), CSC 586A (if taken in the same topic), CSC 586B (if taken in the same topic), CSC 586C (if taken in the same topic), CSC 586D (if taken in the same topic), CSC 586F (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 586F Units: 1.5
Formerly: CSC 586
Topics in Computer Systems and Software
Notes:
• Credit will be granted for only one of CSC 586F, CSC 586 (if taken in the same topic), CSC 586A (if taken in the same topic), CSC 586B (if taken in the same topic), CSC 586C (if taken in the same topic), CSC 586D (if taken in the same topic), CSC 586E (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 588A Units: 1.5
Selected Topics in Data Science
Notes:
• Credit will be granted for only one of CSC 588A, CSC 588 (if taken in the same topic), CSC 588C (if taken in the same topic), CSC 588D (if taken in the same topic), CSC 588E (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 588B Units: 1.5
Selected Topics in Data Science
Notes:
• Credit will be granted for only one of CSC 588B, CSC 588 (if taken in the same topic), CSC 588A (if taken in the same topic), CSC 588C (if taken in the same topic), CSC 588D (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 588C Units: 1.5
Selected Topics in Data Science
Notes:
• Credit will be granted for only one of CSC 588C, CSC 588A (if taken in the same topic), CSC 588B (if taken in the same topic), CSC 588D (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 588D Selected Topics in Data Science
Notes:
• Credit will be granted for only one of CSC 588D, CSC 588A (if taken in the same topic), CSC 588B (if taken in the same topic), CSC 588C (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 589A Units: 1.5
Formerly: CSC 589
General Topics in Computer Science
Notes:
• Credit will be granted for only one of CSC 589A, CSC 589 (if taken in the same topic), CSC 589B (if taken in the same topic), CSC 589C (if taken in the same topic), CSC 589D (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 589B Units: 1.5
Formerly: CSC 589
General Topics in Computer Science
Notes:
• Credit will be granted for only one of CSC 589B, CSC 589 (if taken in the same topic), CSC 589A (if taken in the same topic), CSC 589C (if taken in the same topic), CSC 589D (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 589C Units: 1.5
Formerly: CSC 589
General Topics in Computer Science
Notes:
• Credit will be granted for only one of CSC 589C, CSC 589 (if taken in the same topic), CSC 589A (if taken in the same topic), CSC 589B (if taken in the same topic), CSC 589D (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 589D Units: 1.5
Formerly: CSC 589
General Topics in Computer Science
Notes:
• Credit will be granted for only one of CSC 589D, CSC 589 (if taken in the same topic), CSC 589A (if taken in the same topic), CSC 589B (if taken in the same topic), CSC 589C (if taken in the same topic).
• May be taken more than once for credit in different topics with permission of the department.

CSC 591 Units: 1.5
Directed Studies
Individual studies under the direct supervision of a faculty member. The content and evaluation must be approved by the department.
Note: May be taken more than once for credit in different topics.

CSC 595 Units: 1.5
Research Skills
The main objective is to teach critical skills in order to be a successful researcher. This includes: choosing a research method, preparing for and presenting a research seminar talk, preparing a research proposal, doing literature search, and evaluating constructively research papers, proposals and/or presentations.
Prerequisite(s): Registration in a graduate program in Computer Science.
Grading: INP, COM, N, F.

CSC 597 Units: 1.5
Industrial Master’s Project
Grading: INP, COM, N, F.

CSC 598 Units: 3.0
Master’s Project
Grading: INP, COM, N, F.

CSC 599 Units: 6.0 or 7.5
Master’s Thesis
Grading: INP, COM, N, F.

CSC 693 Units: 3.0
PhD Candidate
Grading: INP, COM, N, F.

CSC 699 Units: 33.0-34.5
PhD Dissertation
Prerequisite(s): CSC 693.
Grading: INP, COM, N, F.

CSPT Cultural, Social and Political Thought
Department of Political Science
Faculty of Social Sciences

CSPT 500 Units: 1.5
Topics in Cultural, Social and Political Thought
An interdisciplinary seminar on topics such as language and social theory, tradition and modernity, democracy and freedom, global order and disorder, structuralism and post-structuralism, feminism and Marxism.
Notes:
• May be taken more than once for credit in different topics to a maximum of 6 units.
• Content will vary from term to term.
Prerequisite(s):
• Admission to a graduate program in Social Sciences or Humanities, and
• permission of the program.

CSPT 501 Units: 1.5
Contemporary Cultural Social and Political Thought I
An exploration of contemporary themes and issues in cultural, social and political thought. The emphasis will be on relating current themes and topics of cultural and disciplinary boundaries.
### CSPT 590 - Directed Readings

**Units:** 1.5 or 3  
Individual study, under the direction of a participating faculty member, of a topic or topics in cultural, social and political thought.  
**Notes:**  
- May be taken more than once for credit in different topics.  
- A student in the Program may substitute POLI 590 or SOCI 590 for CSPT 590, with permission of the Director of the program.

### CSPT 600 - Advanced Topics in Cultural, Social and Political Thought

**Units:** 1.5  
An interdisciplinary PhD Seminar on selected topics in Cultural, Social and Political Thought.  
**Notes:**  
- May be taken more than once for credit in different topics with permission of the faculty to a maximum of 6 units.  
- Content will vary from term to term.  
**Prerequisite(s):**  
- Admission to a graduate program in Social Sciences or Humanities; and  
- permission of the program.

### CSPT 601 - Contemporary Cultural Social and Political Thought II

**Units:** 1.5  
A continuation of 501, this seminar is designed for students proceeding to a doctoral candidacy examination in Cultural Social and Political Thought. The focus will be on themes and thinkers important to contemporary cultural social and political thought but as yet unfamiliar to the students participating in the seminar.

### CSPT 690 - Directed Readings

**Units:** 1.5  
Individual study, under the direction of a participating faculty member, of a topic or topics in cultural, social and political thought.  
**Notes:**  
- May be taken more than once for credit in different topics.  
- A student in the Program may substitute POLI 690 or SOCI 690 for CSPT 690, with permission of the Director of the program.

### CYC 543 - Qualitative Research Methods in Child and Youth Care

**Units:** 1.5  
An overview of approaches to qualitative research that are applicable to child and youth care practice. Students will explore the underlying theoretical assumptions of qualitative research design, compare and apply a range of methodological and conceptual approaches, and practice techniques for generating, analyzing and engaging with various forms of qualitative data.

### CYC 545 - Quantitative Research Methods in Child and Youth Care

**Units:** 1.5  
Students will be expected to learn and be able to apply the techniques of quantitative research methodology to the field of child and youth care. Topics will include: research design and problem formulation, sampling, measurement and scaling, research ethics, and data analysis.

### CYC 546 - Human Change Processes: From Theory to Practice

**Units:** 1.5  
A practice based course that requires students to work with individuals and families in simulated role play scenarios. It begins with the micro contexts of families and moves outward to understand how change occurs in communities and organizations. Human change theory and processes form the foundation of the course in order to explore traditional and contemporary theories of change that highlight gendered and cultural differences and similarities.

### CYC 547 - Professional Leadership in Child and Youth Care

**Units:** 1.5  
Aspects of professional leadership, including ethical practice, teams and teamwork, change management and managing transitions, diversity and cultural competence, transformational learning, learning organizations and environments, strategic thinking and participative management will be explored with special emphasis on the multidisciplinary evolution and transformation of child and youth care settings and programs.

### CYC 549 - Program Design and Development in Child and Youth Care

**Units:** 1.5  
Learners will engage in exploring a range of issues relevant for program planners and implementers in contemporary human services. Issues such as managing complexity, evidence-based practices, outcome measures, budget restraints, leadership of change and creating organizational cultures will be explored.

### CYC 552 - Ethics in Practice

**Units:** 1.5  
The primary purpose of this course is to enable students to expand their thinking by critically reflecting on professional and applied ethics from multiple perspectives and traditions. Developing a familiarity with various conceptual resources and ethical decision-making frameworks, discerning the morally relevant features of various ethical dilemmas, appreciating the complexity, plurality and uncertainty of everyday CYC practice, and critically appraising the adequacy of decision-making tools for responding to ethical concerns and challenges are key course objectives.

### CYC 553 - Practicum in Child and Youth Care

**Units:** 1.5 or 3  
The supervised field placement is designed to provide CYC students with an opportunity to apply their skills working with children, youth, families and communities in a supervised setting. Placements which involve individual, family and/or group counseling, can only be undertaken with qualified (i.e. Master’s level) supervisors, and require a minimum commitment of 300 hours (3.0 units).  
**Notes:**  
- Those students who have not completed a practicum as part of their undergraduate degree will also be required to enrol in the 3.0 unit course. Regular contact with the course instructor and consultations between the student, placement supervisor and instructor will be required.  
- Students registered in the 1.5 unit course will be required to complete a minimum of 165 hours. Students registered in the 3.0 course will be required to complete a minimum of 300 hours.  
**Prerequisite(s):**  
- 10.5 units of 500-level CYC courses; or  
- permission of the school.

### CYC 554 - Diversity in Practice

**Units:** 1.5  
Explores the complexity of diversities that shape the contexts of professional practice with children, youth and their families who come from different communities, represent a wide range of social networks, familial structures and belief systems. The attitudes and skills necessary to equip professionals to be attentive to the socially and culturally diverse populations that they face will be the focus of this course.

### CYC 558 - Applied Research Seminar

**Units:** 1.5  
Engages students in the process of proposal writing in preparation for either their master’s research thesis or applied research project. Students focus on developing their own topic area in conjunction with their supervisor and supervisory committee, through writing that includes a consideration of the Human Research Ethics application, specialized information literacy training, and other issues of writing and research. Students are expected to produce a draft of their research or project proposal.  
**Note:** CYC 553 Practicum in CYC can be taken concurrently.  
**Prerequisite(s):** All of program core courses.

### CYC 561 - Special Topics in Child and Youth Care Theory

**Units:** 1.5 or 3  
Explores specialized areas of theoretical interest in the field of Child and Youth Care.  
**Notes:**  
- May be taken more than once for credit in different topics.  
- Topics will vary.

### CYC 562 - Special Topics in Child and Youth Care Intervention

**Units:** 1.5 or 3  
Students will study models of intervention in child and youth care which are specific to their area of specialization.  
**Notes:**  
- May be taken more than once for credit in different topics.  
- Topics will vary.
**CYC 563 - DHUM 501**

**CYC 563 Units: 1.5**

**Specialized Practicum in Child and Youth Care**

In consultation with a faculty adviser, students will select a special setting for advanced work and training. In some settings, this may take the form of a clinical internship. Students will work under supervision and will consult regularly with both the practicum supervisor and faculty course instructor. Students may be required to complete a specialized theory or intervention course in their area of focus prior to undertaking the specialized practicum. Students are required to complete a minimum of 165 hours.

Prerequisite(s): CYC 553.

Grading: INP, COM, N, F.

**CYC 565 Units: 1.5**

**Child and Adolescent Development in Context**

This course provides a contextualized perspective of child and adolescent development highlighting the importance of culture, historical, social, economic and political contexts to human development. Texts addressing alternative understandings of human development will constitute a significant part of the course.

**CYC 590 Units: 1.5 or 3**

**Directed Studies in Child and Youth Care**

Individual studies under the direct supervision of one or more faculty members. The content, credit value and method of evaluation must be approved by the instructor and School of Child and Youth Care graduate adviser prior to registering in the course.

Note: May be taken more than once for credit in different topics.

**CYC 598 Units: 4.5**

**Applied Research Project**

The student will undertake an applied research project which could, for example, include: (1) program development, (2) program needs assessment, (3) development of an assessment tool/protocol for clients, (4) evaluation of an existing program, (5) cost/benefit analysis of program models, or (6) secondary analysis of existing agency data. The research project should be developed in consultation with the student’s supervisory committee.

Note: Students who have completed CYC 590 may request permission to register in the course.

Prerequisite(s):
- CYC 555, or
- permission of the school.

Grading: INP, COM, N, F.

**CYC 599 Units: 4.5**

**Thesis**

Specialized research on a topic chosen in consultation with the student’s supervisory committee. The thesis should be an original piece of research that would be suitable for publication in a professional journal or presentation at a professional meeting.

Note: Students who have completed CYC 590 may request permission to register in the course.

Prerequisite(s):
- CYC 555, or
- permission of the school.

Grading: INP, COM, N, F.

**CYC 641 Units: 3.0**

**Generating Knowledge in Child and Youth Care**

This doctoral seminar invites students to start “thinking with theory” when considering policy, research and practice in the field of Child and Youth Care. Students will be exposed to a range of contemporary social, political and psychological theories. Throughout the course students will be invited to explore how each theory provides different lenses, tools, and approaches, for taking action in the world.

**CYC 643 Units: 1.5**

**Qualitative Research in Child and Youth Care**

This course examines the theoretical underpinnings and strategies commonly used in qualitative methods, with an emphasis on understanding the relationship between the research question and the methodological decisions involved in choosing approaches for data gathering and analysis. Methodologies that will be considered include but are not restricted to: grounded theory, critical theory, ethnography, phenomenology, and narrative research and their epistemological and ontological similarities and differences.

Note: Students who have completed 3 units of graduate-level research coursework (covering research designs, qualitative data analysis, statistical data analysis and reporting) may request permission to register in the course.

Prerequisite(s): Permission of the school.

**CYC 645 Units: 1.5**

**Quantitative Research in Child and Youth Care**

Students explore and apply quantitative methods for studying issues related to child and youth care such as clinical practice and program evaluation. Statistical techniques include approaches for use with small sample sizes as well as parametric and nonparametric statistical techniques.

Note: Students who have completed 3 units of graduate-level research coursework may request permission to register in the course.

Prerequisite(s): Permission of the school.

**CYC 671 Units: 1.5**

**Social and Cultural Contexts of Child and Youth Care Policy, Practice, Research and Pedagogy**

The course places contemporary CYC issues into social, historical and cultural contexts. Each student identifies a key issue in CYC policy, practice, research and/or pedagogy and, first, provides a critical perspective on the issue, before developing a change agenda designed to transform the issue and its implications.

Prerequisite(s): CYC 641.

**CYC 682B Units: 1.5**

**Practice Internship in Child and Youth Care**

A practice internship provides opportunities for the student to be actively involved and supervised in a practice setting. Practice settings may include teaching environments, face to face counselling settings, international contexts, or work in policy development with a specific Ministry. Normally students will work for 10 hours per week for a maximum of 150 hours. In addition, students will meet with the practicum co-ordinator throughout the term.

Note: Learners may not be paid for work on this research project during the time that they are undertaking the practicum course for university credit.

Grading: INP, COM, N, F.

**CYC 690 Units: 1.5 or 3.0**

**Directed Studies in Child and Youth Care**

Individual study at the doctoral level under the direct supervision of one or more faculty members. The content, credit value and method of evaluation must be approved by the instructor and School of Child and Youth Care graduate adviser prior to registration in the course.

Notes:
- May be taken more than once for credit in different topics.
- Pro Forma required.

**CYC 693 Units: 3.0**

**Candidacy Exams**

Students will be expected to complete two candidacy papers (one focused on the substantive area of interest including related theories, and the other on methodology related to their area and topic of interest) and an oral examination before qualifying to undertake PhD research and a dissertation. Within thirty-six months of registration as a provisional doctoral student and at least six months before the final oral examination, a student must pass a candidacy examination.

Grading: INP, COM, N, F.

**CYC 699 Units: 16.5**

**PhD Dissertation**

Prerequisite(s): CYC 693.

Grading: INP, COM, N, F.

**DHUM**

**Digital Humanities**

**Faculty of Humanities**

**DHUM 501 Units: 1.5**

**Introduction to Digital Humanities**

Surveys and explores intellectual traditions and emergent concerns associated with computing in the arts and humanities. Topics include digital representation, analysis, communication and creation, and involve theoretical considerations and pragmatic approaches.

Notes:
- Credit will be granted for only one of DHUM 501, ENGL 507.
- Typically offered the week before the Digital Humanities Summer Institute (see www.dhsi.org).
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Hours</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td><strong>DHUM 502</strong></td>
<td>1.5</td>
<td>3-0-0</td>
<td>Core Concepts and Skills&lt;br&gt;Focusses on fundamental concepts and skills in the Digital Humanities, with curriculum offered by the Digital Humanities Summer Institute (see <a href="http://www.dhsi.org">www.dhsi.org</a>) or equivalent topical seminars listed annually by the Faculty of Humanities. Typical offerings include DHSI’s Textual Encoding Fundamentals, Digitisation Fundamentals, Fundamentals of Programming/Coding for Humanities (if taken in the same topic).&lt;br&gt;Note: Credit will be granted for only one of DHUM 502, ENGL 509 (if taken in the same topic).</td>
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<tr>
<td><strong>DHUM 503</strong></td>
<td>1.5</td>
<td>3-0-0</td>
<td>Remediation and Curation&lt;br&gt;Focusses on intellectual traditions, emergent concerns, and applications related to digital remediation and curation, with curriculum offered by the Digital Humanities Summer Institute (see <a href="http://www.dhsi.org">www.dhsi.org</a>) or equivalent topical seminars listed annually by the Faculty of Humanities. Examples include XSLT, Databases, Drupal, Digital Editions, Pre-Digital Book.&lt;br&gt;Note: Credit will be granted for only one of DHUM 503, ENGL 509 (if taken in the same topic).</td>
</tr>
<tr>
<td><strong>DHUM 504</strong></td>
<td>1.5</td>
<td>3-0-0</td>
<td>Creation, Communication and Dissemination&lt;br&gt;Focusses on intellectual traditions, emergent concerns, and applications related to creation, communication, and dissemination, with curriculum offered by the Digital Humanities Summer Institute (see <a href="http://www.dhsi.org">www.dhsi.org</a>) or equivalent topical seminars listed annually by the Faculty of Humanities. Examples include Multimedia, Social Media, Mobile Computing, Physical Computing.&lt;br&gt;Note: Credit will be granted for only one of DHUM 504, ENGL 509 (if taken in the same topic).</td>
</tr>
<tr>
<td><strong>DHUM 505</strong></td>
<td>1.5</td>
<td>3-0-0</td>
<td>Analysis, Teaching, and Administration&lt;br&gt;Focusses on intellectual traditions, emergent concerns, and applications pertinent to analysis, teaching, and administration, with curriculum offered by the Digital Humanities Summer Institute (see <a href="http://www.dhsi.org">www.dhsi.org</a>) or equivalent topical seminars listed annually by the Faculty of Humanities. Examples include GIS, Text Analysis, Augmented Reality, Computer Gaming, SEASR, Digital Pedagogy, Large Project Planning and Administration.&lt;br&gt;Note: Credit will be granted for only one of DHUM 505, ENGL 509 (if taken in the same topic).</td>
</tr>
<tr>
<td><strong>DHUM 590</strong></td>
<td>1.5</td>
<td></td>
<td>Directed Reading&lt;br&gt;<strong>DR</strong>&lt;br&gt;Dispute Resolution&lt;br&gt;School of Public Administration&lt;br&gt;Faculty of Human and Social Development&lt;br&gt;Students enrolled in the MA in Dispute Resolution program should also see courses listed as PADR.</td>
</tr>
<tr>
<td><strong>DR 502</strong></td>
<td>1.5</td>
<td></td>
<td>Conflict, Culture, and Diversity&lt;br&gt;Cross-cultural conflicts involve navigating among diverse identities, meanings and ever-changing perceptions. Uses experiential education and dialogue to explore processes, capacities, and tools to bridge cultural conflicts that draw on multiple intelligences. Develops fluency with ways of naming, framing, and taming conflict across cultural contexts; and fluency with culture as it animates and offers creative ways through conflict. Participants will apply theory and research to interpersonal, intercommunal, and international conflicts.</td>
</tr>
<tr>
<td><strong>DR 503</strong></td>
<td>1.5</td>
<td></td>
<td>Also: LAW 372&lt;br&gt;Public Policy, Law, and Dispute Resolution&lt;br&gt;Looks at the nature and scale of conflict in civil society and at the primary strategies that society employs to cope with it. Examines a range of contemporary issues of governance. Focuses on the interaction of legislative, judicial, and administrative institutions around two major themes: how programs and public policy are developed and how conflict is managed.&lt;br&gt;Note: Credit will be granted for only one of DR 503, LAW 372.</td>
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<tr>
<td><strong>DR 506</strong></td>
<td>1.5</td>
<td></td>
<td>Mediation Processes and Skills&lt;br&gt;This course couples mediation processes with practice in communication skills needed for effective third party facilitative intervention. Using the paradigm of Attitude, Process and Skills, students learn and practice mediation as a dispute resolution tool, integrated with prior learning in conflict analysis and diagnosis. Through lectures, clinical exercises, demonstrations, coached role play, reflective listening skills practice, and group discussions, students connect skills with theoretical and philosophical foundations of mediation required to satisfactorily conclude mediated agreements.&lt;br&gt;Note: Credit will be granted for only one of DR 506, DR 510 (if taken in the same topic).&lt;br&gt;Prerequisite(s): DR 501 or PADR 501.</td>
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<tr>
<td><strong>DR 507</strong></td>
<td>1.5</td>
<td></td>
<td>Also: LAW 373&lt;br&gt;International Human Rights and Dispute Resolution&lt;br&gt;Explores linkages between international human rights law, conflict analysis and dispute resolution. Participants explore literature from several disciplines including international law, history, philosophy, anthropology, political science and conflict studies. United Nations, regional and national human rights instruments and mechanisms are examined for their efficacy in human rights protection. Concerns of individuals, including women and children, non-state and indigenous peoples are addressed. Students develop skills in human rights analysis, advocacy and dialogue.</td>
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<tr>
<td><strong>DR 508</strong></td>
<td>1.5</td>
<td></td>
<td>Dispute Resolution and Indigenous Peoples&lt;br&gt;Explores the theory and practice of negotiation and mediation within the context of public issues and disputes involving indigenous peoples. Includes a comparative examination of perspectives on negotiation of dominant society and indigenous peoples in Canadian and other settings. A critical approach is taken to the application of dominant society models of negotiation and mediation to conflict situations involving indigenous people, including the examination of historical factors, dynamics of power, and cross-cultural factors.&lt;br&gt;Prerequisite(s):&lt;br&gt;• DR 501 or PADR 501; and&lt;br&gt;• DR 502; or&lt;br&gt;• Permission of the department</td>
</tr>
<tr>
<td><strong>DR 509</strong></td>
<td>1.5</td>
<td></td>
<td>Dispute Resolution System Design and Public Interest Disputes&lt;br&gt;Introduction to designing, assembling and implementing systems to prevent, manage and/or resolve a series or stream of disputes arising out of a single organization and/or relationships. Examines models of conflict intervention and the design process within organizations. Introduces the theory and practice of negotiating public-interest issues and managing stakeholder conflicts.</td>
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<tr>
<td><strong>DR 510</strong></td>
<td>1.5</td>
<td></td>
<td>Special Topics in Dispute Resolution&lt;br&gt;A study of selected special topics in Dispute Resolution drawn from the current literature and practice.&lt;br&gt;Note: May be taken more than once for credit in different topics.&lt;br&gt;Prerequisite(s): Set by department depending upon topic.</td>
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</tbody>
</table>
| **DR 511** | 1.5   |       | Conflict Specialists as Leaders<br>A role of a conflict specialist is to support organizations and/or groups to replace traditional public policy decision-making processes with collaborative governance processes. As change agents, both dispute resolution process and leadership competencies are required. Students will build and bridge these competencies by learning communication skills, design analysis, and implementation strategies for deliberation and engagement, as well as leadership skills to support change.<br>Recommendation(s): All of DR 502, DR 503, DR 506, DR 509 recommended prior to DR 511.
ECE 516 - ECE 517

ECE 516
Units: 1.5
Also: LAW 325
Access to Justice
Examines the fact of diminishing access to justice and its implications for the public, professionals, the justice system and society as a whole. Provides a theoretical framework and practical ideas to help students understand and respond to access issues. Topics include: the causes, scale and consequences of unmet legal needs; strategies and initiatives to enhance access; and how access issues are forcing the justice system to rethink professional roles, responsibilities and ethics.
Note: Credit will be granted for only one of DR 516, DR 510 (if taken in the same topic), LAW 325 (if taken in the same topic), LAW 343 (if taken in the same topic).

DR 517
Units: 1.5
Issues in Dispute Resolution: Working in the Community
Through classroom and experiential learning and critical reflection, students will gain dispute resolution work experience while learning of the character, structure and dynamics of community groups and agencies. Topics and skill building will include personal and strategic awareness, critical analysis, engagement, communication, professionalism and leadership. Provides critical understanding of processes of social change, group dynamics, activism, and agency-stakeholder relations. Requires a minimum of 40 hours in an approved community voluntary work placement.

DR 521
Units: 1.5-3.0
Directed Studies
Individual studies under the supervision of a faculty member, with permission of the Graduate Adviser.
Notes:
• May be taken more than once for credit in different topics.
• Pre-Forma required.

DR 598
Units: 4.5
Master’s Project
A substantial analysis of a conflict situation or process, policy issue, or other relevant topic, which may be done for a client in the non-profit or public sector. The Master’s Project is prepared under the supervision of a School of Public Administration faculty member and must be both practical and academically rigorous. Students have the choice of working individually or with a student partner. A written project report is defended in an oral examination.
Grading: INP, COM, N, F.

DR 599
Units: 6.0
Master’s Thesis
The thesis option requires original research on a topic chosen in consultation with the student’s supervisor and the Graduate Adviser.
Grading: INP, COM, N, F.

ECE 512
Units: 1.5
Formerly: ELEC 520
Digital Communications
Source and channel descriptions. Source digitization, entropy and the rate distortion tradeoff, lossless source codes (Huffman and run length codes), optimal and adaptive quantization. Digital modulation techniques, optimal coherent receivers, performance evaluation, the incoherent case. Special topics - case studies, fiber optics, satellite systems, mobile radio systems. Students are required to complete a project.
Note: Credit will be granted for only one of ECE 512, ECE 450, ELEC 512, ECE 450.

ECE 514
Units: 1.5
Formerly: ELEC 514
Design and Analysis of Computer Communication Networks
Note: Credit will be granted for only one of ECE 514, ECE 463, CENG 461, ELEC 514.

ECE 515
Units: 1.5
Formerly: ELEC 515
Information Theory
Information theory and its relationship to probability, statistics, and data compression; entropy, relative entropy and mutual information; Huffman coding, arithmetic coding and Lempel-Ziv coding; channel capacity, group codes; generator and parity check matrices; Hamming codes and bound; bounds on the dimension of a linear code; random coding bounds; code construction.
Note: Credit will be granted for only one of ECE 515, ELEC 515.

ECE 516
Units: 1.5
Formerly: ELEC 516
Advanced Wireless Communications
Statistical fading channel models, digital communications over fading channels, diversity techniques for fading mitigation, channel adaptive transmission, multicarrier modulation/OFDM, spread spectrum techniques/CDMA, MIMO systems and space-time coding.
Note: Credit will be granted for only one of ECE 516, ECE 519A (if taken in the same topic), ELEC 516, ELEC 519A (if taken in the same topic).

ECE 517
Units: 1.5
Formerly: ELEC 517
Software Defined Radio
Software defined radio architectures. Receiver design: radio frequency, digital signal processing, software. Application to analog and digital communications, cognitive radio, dynamic spectrum access. Implementation of software radio algorithms using GNU Radio, Simulink or other platforms. Students are required to complete a project.
Note: Credit will be granted for only one of ECE 517, ECE 417, ECE 539A (if taken in the same topic), ELEC 417, ELEC 517, ELEC 539A (if taken in the same topic).

ECE 503
Units: 1.5
Formerly: ELEC 503
Optimization for Machine Learning
The steepest-descent, Newton, conjugate, and quasi-Newton algorithms for unconstrained optimization. Inexact line-search techniques. Application of optimization methods to classification, logistic regression, and support vector machines for signal processing and machine intelligence involving audio, image, video and other types of data. Introduction to constrained optimization. Students are required to complete a project.
Note: Credit will be granted for only one of ECE 503, ECE 403, ELEC 403, ELEC 503.

ECE 504
Units: 1.5
Formerly: ELEC 504
Random Signals
Review of random variables, moments and characteristic functions; random processes, noise models, stationarity, ergodicity, correlation and power spectrum, spectrum measurements; response of linear systems to random inputs, cross-spectral densities, narrow band noise; introduction to discrete time and space processes. Students are required to complete a project.
Note: Credit will be granted for only one of ECE 504, ELEC 400, ELEC 504.

ECE 509
Units: 1.0
Formerly: ELEC 509
Seminar
Expose Master’s students to different areas of research through seminar participation and provide a forum for the presentation of graduate student research. Required for all Master’s students every year of their program as an addition to the normal program except by departmental permission. One unit of credit shall be given upon completion.
Note: Credit will be granted for only one of ECE 509, ELEC 509.

ECE 511
Units: 1.5
Formerly: ELEC 511
Error Control Coding
The channel coding problem; coding approaches and characteristics; linear block codes, bounds on codes; finite fields; cyclic, BCH and Reed-Solomon codes; convolutional codes and the Viterbi algorithm; error control in data storage and transmission systems. Students are required to complete a project.
Note: Credit will be granted for only one of ECE 511, ECE 405, ELEC 405, ELEC 511.
ECE 519A  Units: 1.5  
Formerly: ELEC 519A, ELEC 619A  
Selected Topics in Digital Communications  
Notes:  
• Credit will be granted for only one of ECE 519A, ELEC 519A (if taken in the same topic), ELEC 619A (if taken in the same topic).  
• May be taken more than once for credit in different topics to a maximum of 3 units.  
• Variable content course.

ECE 519B  Units: 1.5  
Formerly: ELEC 519B, ELEC 619B  
Selected Topics in Computer Communications  
Notes:  
• Credit will be granted for only one of ECE 519B, ELEC 519B (if taken in the same topic), ELEC 619B (if taken in the same topic).  
• May be taken more than once for credit in different topics to a maximum of 3 units.  
• Variable content course.

ECE 519C  Units: 1.5  
Formerly: ELEC 519C, ELEC 619C  
Selected Topics in Secure Communications  
Notes:  
• Credit will be granted for only one of ECE 519C, ELEC 519C (if taken in the same topic), ELEC 619C (if taken in the same topic).  
• May be taken more than once for credit in different topics to a maximum of 3 units.  
• Variable content course.

ECE 520  Units: 1.5  
Formerly: ELEC 520  
Antennas and Propagation  
Antenna and propagation fundamentals, Friis transmission formula, radar equation, Maxwell’s equations for radiation problems, antenna parameters, simple radiators, array theory, mutual coupling, wire and broadband antennas, aperture radiators, scattering and diffraction, multipath propagation and fading, antenna measurement techniques, surface-wave and ionospheric propagation, microwave and millimeter wave propagation. Students are required to complete a project.  
Note: Credit will be granted for only one of ECE 522, ECE 453, ELEC 453, ELEC 522.

ECE 522  Units: 1.5  
Formerly: ELEC 522  
Theory and Design of Waveguide Components  
Modern integrated waveguide technologies, numerical analysis aspects and design strategies, mode-matching techniques, commonly used waveguides; transformers and transformer prototypes; phase shifters; power dividers; directional couplers; waveguide filters; multiplexers; polarizers; orthomode transducers; mode converters; angle diversity systems.  
Note: Credit will be granted for only one of ECE 524, ELEC 524, ELEC 624.

ECE 525  Units: 1.5  
Formerly: ELEC 525  
Advanced Photonics  
Methods to understand optical devices. Following a basic review of electromagnetics, methods for analyzing photonic devices will be provided. Among other applications, these methods will be applied to the analysis of sensors (surface plasmon resonance), high-reflectivity and anti-reflection coatings, Bragg gratings, and semiconductor lasers.  
Note: Credit will be granted for only one of ECE 525, ELEC 525.

ECE 526  Units: 1.5  
Formerly: ELEC 526, ELEC 623  
Advanced Optical Systems  
Overview of the basic technologies and system design principles for modern optical communications. Component fundamentals, including optical fiber, lasers, transmitters, photodetectors, receivers, passive components, optical amplifiers. Optical modulation, demodulation, wavelength multiplexing techniques. Applications to wide-area and access networks, microwave photonics. System impairments related to noise, fiber dispersion, nonlinearity. Students work in groups to design a national-scale broadband system, combining primary course elements and commercial software.  
Note: Credit will be granted for only one of ECE 526, ELEC 526, ELEC 623.

ECE 529A  Units: 1.5  
Formerly: ELEC 529A, ELEC 629  
Selected Topics in Micro Millimeter Waves and Optical Engineering  
Notes:  
• Credit will be granted for only one of ECE 529A, ELEC 529A (if taken in the same topic), ELEC 629 (if taken in the same topic).  
• May be taken more than once for credit in different topics to a maximum of 3 units.  
• Variable content course.

ECE 530  Units: 1.5  
Formerly: ELEC 530  
Digital Filters I  
Note: Credit will be granted for only one of ECE 531, ECE 407, ECE 458, ELEC 407, ELEC 458, ELEC 531.

ECE 531  Units: 1.5  
Formerly: ELEC 531  
Digital Filters II  
Note: Credit will be granted for only one of ECE 533, ECE 407, ECE 458, ELEC 407, ELEC 458, ELEC 531.

ECE 534  Units: 1.5  
Formerly: ELEC 534  
Applications of Digital Signal Processing Techniques  
Note: Credit will be granted for only one of ECE 534, ECE 459, ELEC 459, ELEC 534.

ECE 535  Units: 1.5  
Formerly: ELEC 535  
Data Analysis and Pattern Recognition  
Statistical data analysis and random processes, ergodicity and stationarity, Bayesian decisions procedures, feature extraction and selection, parametric and non-parametric pattern classification and clustering techniques. Applications to big data, data science, and computer security problems. Students are required to complete a project.  
Note: Credit will be granted for only one of ECE 535, ECE 485, ELEC 485, ELEC 535.

ECE 536  Units: 1.5  
Formerly: ELEC 536  
Computer Vision  
Overview of the main concepts and methods in computer vision, geometry and physics of imaging, as related to image formation and image acquisition; low-level methods of image analysis, such as filtering, edge detection, feature detection, and segmentation; methods for extracting and representing three-dimensional scene information; motion analysis and algorithms for video understanding. Students are required to complete a project.  
Note: Credit will be granted for only one of ECE 536, ECE 471, CENG 421, ELEC 536.

ECE 537  Units: 1.5  
Formerly: ELEC 537  
Applied Data Analysis  
Theory and application of modern data analysis and machine learning methodologies to larger scale real-world data analytics problems. Impacts of outliers, normalization processes, feature selection and extraction, data set biases, and noise on analysis quality. Implications of stationarity, ergodicity, and adversaries on data analysis processes. Students are required to complete a project.  
Prerequisite(s):  
• One of ECE 485, ECE 533, ELEC 485, ELEC 533; or  
• permission of the department.

ECE 539A  Units: 1.5  
Formerly: ELEC 539A, ELEC 639A  
Selected Topics in Digital Signal Processing  
Notes:  
• Credit will be granted for only one of ECE 539A, ELEC 539A (if taken in the same topic), ELEC 639A (if taken in the same topic).  
• May be taken more than once for credit in different topics to a maximum of 3 units.  
• Variable content course.
**ECE 539B**  Units: 1.5
Formerly: ELEC 539B, ELEC 639B
Selected Topics in Image Processing
Notes:
- Credit will be granted for only one of ECE 539B, ELEC 539B (if taken in the same topic), ELEC 639B (if taken in the same topic).
- May be taken more than once for credit in different topics to a maximum of 3 units.
- Variable content course.

**ECE 539C**  Units: 1.5
Formerly: ELEC 679, ELEC 539C
Selected Topics in Underwater Acoustic Systems
Notes:
- Credit will be granted for only one of ECE 539C, ELEC 539C (if taken in the same topic), ELEC 679.
- May be taken more than once for credit in different topics to a maximum of 3 units.
- Variable content course.

**ECE 543**  Units: 1.5
Formerly: ELEC 543
Design of Digital and VLSI Systems
Advanced combinational and sequential logic design. Optimization of finite state machines; timing methodologies and synchronization issues. Hardware description languages (HDL): structural and behavioural descriptions, simulations and testbenches, coding styles, design with HDL and FPGA implementation. Design for test: testing concepts, scan-based design and built-in self-test (BIST). Design for high speed: timing analysis, pipelining and retiming. Design for low power: sources of power dissipation, design transformations. Students will be required to complete a project.
Note: Credit will be granted for only one of ECE 543, ECE 441, CENG 441, ELEC 543.

**ECE 545**  Units: 1.5
Formerly: ELEC 545
Nanotechnology
Nanoscale materials and devices. Techniques and tools of nanostructure fabrication and characterization. Properties of low-dimensional materials. Semiconductor nanostructures, metallic nanoparticles, carbon nanotubes, organic molecules, quantum dots. Applications including nanoelectronics and molecular devices, biotechnology, nanoscale computation, nanomechanical devices and nanophotonics. Students are required to complete a project.
Note: Credit will be granted for only one of ECE 545, ECE 420, ELEC 420, ELEC 545.

**ECE 546**  Units: 1.5
Formerly: ELEC 546, ELEC 642
Mapping DSP Algorithms onto Processor Arrays
Note: Credit will be granted for only one of ECE 546, ELEC 546, ELEC 642.

**ECE 547**  Units: 1.5
Formerly: ELEC 547
Electronic Devices
Study of the operation of bipolar and field-effect devices in VLSI design. Study of photonic and opto-electronic devices used in transmission, modulation, demodulation and receivers. Principles, construction and design of lasers and their applications. Study of display devices, thin-film devices, imaging devices, transducers and micromachines and their interfacing. Sensor arrays and related system design. Students are required to complete a project.
Note: Credit will be granted for only one of ECE 547, ELEC 412, ELEC 412, ELEC 547.

**ECE 548**  Units: 1.5
Formerly: ELEC 548
Cyber-System Security
Introduction to abstract algebra and finite field arithmetic. Hardware attacks and mitigation techniques. Hardware trojans and hardware trojan detection techniques. Trusted design in FPGAs. Security in embedded systems. Design for hardware trust. Security and testing. Crypto-processors and design for security. Students will be required to complete a project.
Note: Credit will be granted for only one of ECE 548, ECE 448, CENG 448, ELEC 548.

**ECE 549A**  Units: 1.5
Formerly: ELEC 549A, ELEC 688
Selected Topics in Electronics
Notes:
- Credit will be granted for only one of ECE 549A, ELEC 549A (if taken in the same topic), ELEC 688 (if taken in the same topic).
- May be taken more than once for credit in different topics to a maximum of 3 units.
- Variable content course.

**ECE 549B**  Units: 1.5
Formerly: ELEC 549B, ELEC 649B
Selected Topics in VLSI Design
Notes:
- Credit will be granted for only one of ECE 549B, ELEC 549B, ELEC 649B (if taken in the same topic).
- May be taken more than once for credit in different topics to a maximum of 3 units.
- Variable content course.

**ECE 551**  Units: 1.5
Formerly: ELEC 551
Digital Filters II
Notes:
- Credit will be granted for only one of ECE 551, ELEC 551, ELEC 631.
- Students who have completed equivalent prerequisites may request permission to register in the course.
Prerequisite(s):
- One of ECE 407, ECE 531, ELEC 407, ELEC 531; or
- permission of the department.

**ECE 553**  Units: 1.5
Formerly: ELEC 553
Introduction to Parallel and Cluster Computing
Overview of massively parallel and cluster computers. Processing models (shared memory versus message passing). Processes and threads. Standard algorithms utilizing parallelism. Matrix and vector operations. N-body problems, collective communications. Parallel application environments MPI and OpenMP. Includes significant exposure to parallel applications including developing and coding of sample parallel codes. Students are required to complete a project.
Note: Credit will be granted for only one of ECE 553, ECE 457, CENG 453, ELEC 553.

**ECE 559A**  Units: 1.5
Formerly: ELEC 559A, ELEC 659A
Selected Topics in Robotics
Notes:
- Credit will be granted for only one of ECE 559A, ELEC 559A (if taken in the same topic), ELEC 659A (if taken in the same topic).
- May be taken more than once for credit in different topics to a maximum of 3 units.
- Variable content course.

**ECE 559B**  Units: 1.5
Formerly: ELEC 559B, ELEC 659B
Selected Topics in Automatic Control
Notes:
- Credit will be granted for only one of ECE 559B, ELEC 559B (if taken in the same topic), ELEC 659B (if taken in the same topic).
- May be taken more than once for credit in different topics to a maximum of 3 units.
- Variable content course.
ECE 564 - Units: 1.5
Formerly: ELEC 564
Neural Networks and Their Implementation

Biological inspiration, historical background, learning in neural nets (backpropagation, Hebbian, etc.), single- and multilayer networks, associative memories, classification and clustering models, recurrent networks. Neural network technology, implementation software and hardware technologies, algorithm definitions, computational requirements, solution methods, parallel processing hardware, VLSI and optical implementations of neural networks.

Note: Credit will be granted for only one of ECE 564, ELEC 564.

ECE 567 - Units: 1.5
Formerly: ELEC 567
Advanced Network Security

Presents, from a practical perspective, underlying principles and techniques of network security. Students will be exposed to ethical hacking, and penetration testing. Various protection methods, used in practice to detect and respond to malicious network attacks, will be presented. Students will also learn how to implement secure security policies and defense mechanisms and strategies, with a particular focus on firewalls, intrusion detection and response, virtual private networks, and biometrics technologies.

Note: Credit will be granted for only one of ECE 567, ELEC 567.

ECE 568 - Units: 1.5
Formerly: ELEC 568
System-on-Chip Engineering for Signal Processing

Design and System-on-Chip (SOC) implementation for signal processing applications. SOC design and testing methodologies, Platform-based design, Intellectual Property (IP) reuse, and built-in self-test; Controlling power consumption in SOC implementations. SOC multi-technology integration of analog and digital electronics, sensors and MEMS. Students are required to complete a project.

Note: Credit will be granted for only one of ECE 568, ELEC 466, ELEC 466, ELEC 568.

ECE 569A - Units: 1.5
Formerly: ELEC 569A, ELEC 569
Selected Topics in Computer Engineering

Notes:
• Credit will be granted for only one of ECE 569A, ELEC 569A (if taken in the same topic), ELEC 669 (if taken in the same topic).
• May be taken more than once for credit in different topics to a maximum of 3 units.
• Variable content course.

ECE 570 - Units: 1.5
Formerly: ELEC 570
Computer Forensics Methodologies

Digital forensics notions and techniques used in the investigation of cybercrimes. Legal awareness of computer security and forensics, evidentiary process techniques, computer forensics methodologies with an emphasis on computer incident response and Information Technology (IT) systems’ protection. Ethics, rules of evidence, effective communications, search and seizure relative to privacy legislation. Threats, how they can be detected, and controls to reduce the likelihood of their occurrence.

Note: Credit will be granted for only one of ECE 570, ELEC 570.

Prerequisite(s): ECE 567 or ELEC 567.

ECE 571 - Units: 1.5
Formerly: ELEC 571
Underwater Acoustic Systems


Note: Credit will be granted for only one of ECE 571, ELEC 571.

ECE 572 - Units: 1.5
Formerly: ELEC 572
Security, Privacy, and Data Analytics

Explores the underlying theoretical foundations of information security and privacy issues from an engineering perspective. Applications of information-theoretic concepts, techniques, and methods to the problem of quantifying achieved levels of security and privacy in larger-scale systems in the presence of adversaries. Students are required to complete a project.

Note: Credit will be granted for only one of ECE 572, ELEC 572.

Prerequisite(s): ECE 567 or ELEC 567.

ECE 573 - Units: 1.5
Formerly: ELEC 573, ELEC 603
Advanced Engineering Design by Optimization


Note: Credit will be granted for only one of ECE 573, ELEC 573, ELEC 603.

ECE 574 - Units: 1.5
Formerly: ELEC 574
Practice of Information Security and Privacy

Aims to present a holistic view of various security engineering topics through practical case studies. Topics include enterprise security architecture, security threat and risk assessment, education and awareness, monitoring, investigation and forensics, application security, media handling and intellectual property, privacy, physical and environmental security, and business continuity planning. Also introduces information security-related certification and relevant professional associations. Students are required to complete a project.

Note: Credit will be granted for only one of ECE 574, ELEC 574, SENG 460.

ECE 579A - Units: 1.5
Selected Topics in Data Science

Notes:
• May be taken more than once for credit in different topics to a maximum of 3 units.
• Variable content course.

ECE 581 - Units: 1.5
Formerly: ELEC 581
Power Electronics

Characteristics of power semiconductor switching devices, e.g., silicon controlled rectifiers, bipolar and MOS power transistors, insulated gate bipolar transistors, gate-turn-off thyristors. Basic principles of phase controlled converters, dc to ac choppers, ac to inverter applications (square wave and pulse width modulated), switching power supplies, resonant converters. Applications to communication and computer power supplies, electric drives, induction heating, etc.

Note: Credit will be granted for only one of ECE 581, ELEC 581.

ECE 583 - Units: 1.5
Formerly: ELEC 583
Digital Video Processing


Note: Credit will be granted for only one of ECE 583, ECE 483, ELEC 483, ELEC 583.

ECE 584 - Units: 1.5
Formerly: ELEC 584
Dynamics and Control of Switched Mode Power Supplies

Introduction to switch mode power supplies. Detailed analysis of non-isolated converters (Buck, Boost, Buck-Boost, Cuk, etc) and isolated converters (Flyback, Forward, Push-pull, Half bridge, Full bridge, Current Source converters, etc.). State space averaging technique to model converters. Design of multi-loop controllers (inner current loop and outer voltage loop). Introduction to PWM switch model as an alternative to state space averaging technique. Students will need to complete a project.

Note: Credit will be granted for only one of ECE 584, ECE 461, ELEC 461, ELEC 584, ELEC 689 (if taken in the same topic).
### ECE 585 Units: 1.5
Formerly: ELEC 585
**Motor Drive Dynamics**

**Notes:** Credit will be granted for only one of ECE 585, ECE 462, ELEC 462, ELEC 585, ELEC 689 (if taken in the same topic).

### ECE 586 Units: 1.5
Formerly: ELEC 586
**Multiresolution Signal and Geometry Processing With C++**
Multirate signal processing, upsampling, down-sampling, sampling rate conversion, polyphase techniques, multirate filter banks, multiresolution signal representations, wavelets, digital geometry processing, polygon meshes, subdivision surfaces/wavelets, efficient multiresolution signal processing. Applications in data compression, computer graphics/animation, geometric modeling, communications, and signal processing. C++ programming language, libraries such as OpenGL and CGAL. Students are required to complete a project.

**Notes:** Credit will be granted for only one of ECE 586, ECE 486, ELEC 486, ELEC 586.

### ECE 589A Units: 1.5
Formerly: ELEC 589A, ELEC 689
**Selected Topics in Power Electronics**
**Prerequisite(s):** Permission of the department.

### ECE 590 Units: 1.5
Formerly: ELEC 590
**Directed Study**
Graduate course in the Electrical and Computer Engineering program administered by the Faculty of Graduate Studies. A wide range of topics will be available.

**Notes:** Credit will be granted for only one of ECE 590, ELEC 590 (if taken in the same topic). Pro Forma required.

### ECE 591 Units: 1
Formerly: ELEC 591
**Professional Foundation**

**Notes:** Credit will be granted for only one of ECE 591, ELEC 591. This course will be offered by the Engineering and Computer Science Co-op and Career Services.

**Prerequisite(s):** Admission to MENG program in Telecommunications and Information Security.

### ECE 592A Units: 1
Formerly: ELEC 592A, part of ELEC 592
**Professional Career Development I**

**Notes:** Credit will be granted for only one of ECE 592A, ELEC 592, ELEC 592A.

**Prerequisite(s):** Admission to MENG program in Telecommunications and Information Security.

### ECE 592B Units: 1
Formerly: ELEC 592B, part of ELEC 592
**Professional Career Development II**

**Notes:** Credit will be granted for only one of ECE 592B, ELEC 592, ELEC 592B.

**Prerequisite(s):** Admission to MENG program in Telecommunications and Information Security.

### ECE 596A Units: 1.5
**Selected Topics in Electrical and Computer Engineering**
Presents material in an emerging field or one not covered in regular offerings. Some topics may require laboratory work as well as lectures. Entrance is restricted to students who meet the prerequisites specified for the topic to be offered.

**Notes:** Credit will be granted for only one of ECE 596A, ECE 596B (if taken in the same topic), ECE 596C (if taken in the same topic), ECE 596D (if taken in the same topic).

**May be taken more than once for credit in different topics with permission of the Department.**

**Variable content course.**

### ECE 596B Units: 1.5
**Selected Topics in Electrical and Computer Engineering**
Presents material in an emerging field or one not covered in regular offerings. Some topics may require laboratory work as well as lectures. Entrance is restricted to students who meet the prerequisites specified for the topic to be offered.

**Notes:** Credit will be granted for only one of ECE 596B, ECE 596A (if taken in the same topic), ECE 596C (if taken in the same topic), ECE 596D (if taken in the same topic).

**May be taken more than once for credit in different topics with permission of the Department.**

**Variable content course.**

### ECE 596C Units: 1.5
**Selected Topics in Electrical and Computer Engineering**
Presents material in an emerging field or one not covered in regular offerings. Some topics may require laboratory work as well as lectures. Entrance is restricted to students who meet the prerequisites specified for the topic to be offered.

**Notes:** Credit will be granted for only one of ECE 596C, ECE 596A (if taken in the same topic), ECE 596B (if taken in the same topic), ECE 596D (if taken in the same topic).

**May be taken more than once for credit in different topics with permission of the Department.**

**Variable content course.**

### ECE 596D Units: 1.5
**Selected Topics in Electrical and Computer Engineering**
Presents material in an emerging field or one not covered in regular offerings. Some topics may require laboratory work as well as lectures. Entrance is restricted to students who meet the prerequisites specified for the topic to be offered.

**Notes:** Credit will be granted for only one of ECE 596D, ECE 596A (if taken in the same topic), ECE 596B (if taken in the same topic), ECE 596C (if taken in the same topic).

**May be taken more than once for credit in different topics with permission of the Department.**

**Variable content course.**

### ECE 597 Units: 1.5
**Capstone Project**
**Prerequisite(s):** Admission to MENG program in Telecommunications and Information Security.

**Grading:** INP, COM, N, F

### ECE 598 Units: 5.0
Formerly: ELEC 598
**MEng Project**
**Note:** Credit will be granted for only one of ECE 598, ELEC 598.

**Grading:** INP, COM, N, F

### ECE 599 Units: 12.0
Formerly: ELEC 599
**MASc Thesis**
**Note:** Credit will be granted for only one of ECE 599, ELEC 599.

**Grading:** INP, COM, N, F
ECE 699
Formerly: ELEC 699
PhD Dissertation
Note: Credit will be granted for only one of ECE 699, ELEC 699.
Pre-or Corequisite(s): ECE 693 or ELEC 693.
Grading: INP, COM, N, F.

ECE 609
Units: 1.0
Formerly: ELEC 609
Seminar
Expose PhD students to different areas of research through seminar participation and provide a forum for the presentation of graduate student research. Required for all Doctoral students every year of their program as an addition to the normal program except by departmental permission. One unit of credit shall be given upon completion.

Note: Credit will be granted for only one of ECE 609, ELEC 609.

Grading: INP, COM, N, F.

ECE 621
Units: 1.5
Formerly: ELEC 621
Numerical Techniques in Electromagnetics

Notes:
- Credit will be granted for only one of ECE 621, ELEC 621.
- Students who have completed equivalent prerequisites may request permission to register in the course.

Prerequisite(s):
- One of ECE 522, ECE 524, ECE 525, ELEC 521, ELEC 522, ELEC 524, ELEC 525; or
- permission of the department.

ECE 693
Units: 3.0
Formerly: ELEC 693
PhD Candidacy Examination
The PhD Candidacy Examination consists of an oral examination. This examination should be taken and passed not later than three years from initial PhD registration. Required of all PhD students every term of their program until the oral examination is passed.

Note: Credit will be granted for only one of ECE 693, ELEC 693.

Corequisite(s): ECE 699
Grading: INP, COM, N, F.

ECE 699
Units: 30.0-36.0
Formerly: ELEC 699
PhD Dissertation
Note: Credit will be granted for only one of ECE 699, ELEC 699.

ECON 500
Units: 1.5
Microeconomic Analysis
An introduction to consumer demand, production and market organization. Topics covered will generally include: consumer demand; duality; choice under uncertainty; intertemporal choice; measuring welfare change; the competitive firm; the two sector model; properties of competitive equilibrium; market structure; and externalities.

ECON 501
Units: 1.5
Macroeconomic Analysis
An introduction to macroeconomic analysis. Long-run growth, business cycles, trade, and fiscal policy are analyzed using dynamic general equilibrium models. Classical and Keynesian models are used to examine inflation, unemployment, the open economy, and monetary policy. Limitations and extensions of the models are discussed and developed.

ECON 506
Units: 1.5
Monetary Theory and Policy
The examination of selected contributions to contemporary monetary theory and policy, and their relationship to macroeconomics.

ECON 510
Units: 1.5
Industrial Organization and Public Policy
Provides a framework in which to examine policy issues with respect to industrial competition and regulation. Begins with the firm and its relation to the market, and then examines issues relating to market structure and regulation. Topics may include: durable goods monopoly; price discrimination; product differentiation; product quality; advertising; predatory pricing; mergers; and the natural monopoly.

ECON 515
Units: 1.5
Labour Economics
Introduction to contemporary empirical and applied theoretical research into labour markets. Topics may include: labour supply; labour demand; human capital; discrimination; labour market dynamics; unemployment; and behaviour of the household.

ECON 516
Units: 1.5
Cost-Benefit Analysis
Methods of cost-benefit analysis with applications to public policy. Develops a normative foundation for policy analysis, addressing issues of efficiency and wealth redistribution together with the techniques of cost-benefit analysis. Focuses on contemporary Canadian policy issues.

ECON 520
Units: 1.5
Economic Development
The processes and problems of development in the economies of the Developing World. Topics may include: theories of economic development; poverty and inequality; gender and development; nutrition and food policies; agricultural and rural development; employment and migration.

ECON 524
Units: 1.5
Health Economics
An overview of selected issues in contemporary health economics. Topics may include: microeconomic models of physician and patient behavior, econometric methods relevant to the analysis of health data, health insurance, social determinants of health, and the economics of health-affecting behaviors such as smoking and alcohol use.

ECON 525
Units: 1.5
Public Finance and Fiscal Policy
Seminar in selected topics in fiscal policy and public finance including the incidence and effects of taxation, government expenditure programs and public debt operations.

ECON 529
Units: 1.5
Economics of Finance
The basic theory of finance under uncertainty. Topics include expected utility maximization, state preference theory, analysis of capital asset pricing, and option pricing.

ECON 530
Units: 1.5
Economics of Natural Resources
Seminar in the economics of natural resources including a survey of relevant theoretical literature and selected topics covering problems of resource industries.

ECON 531
Units: 1.5
Environmental Economics
An introduction to environmental economics and policy. Develops a normative foundation for policy analysis, addressing issues of efficiency, intergenerational equity and sustainability. A range of policy regimes are covered, including command-and-control regulation, market-based instruments, and legal liability, with applications to a variety of domestic and international environmental issues.

ECON 545
Units: 1.5
Econometric Analysis
The basics of estimation and hypothesis testing in the classical linear regression model, with empirical exercises using economic data. Topics typically include: testing and imposing linear restrictions; dummy variables; specification error; multicollinearity; measurement error; serial correlation; heteroskedasticity; and simultaneity.

ECON 546
Units: 1.5
Themes in Econometrics
A systematic presentation of the principal themes in econometric inference, such as Maximum Likelihood, Instrumental Variables, Method of Moments, Bayesian Inference, Likelihood Ratio, Wald, and Lagrange Multiplier tests. A discussion of Nonparametric and Semiparametric inference, asymptotic distribution theory and Monte Carlo simulation methods. Application of these methods in empirical projects.

ECON 547
Units: 1.5
Time-Series Econometrics
Time-series theory and its application. Topics may include: ARMA modelling; detecting non-stationarity, structural breaks; multiple unit roots; seasonality; cointegration tests VAR and VECM models.
ECON 548  Units: 1.5
Applied Econometric Modelling
Explores a range of practical estimation and testing issues in the context of different types of econometric models. Topics may include: panel models; nonparametrics and semiparametrics; latent variable models; simultaneous equations models; resampling methods, and the methodology-practice gap.

ECON 549  Units: 1.5
Computational Methods in Economics and Econometrics
An introduction to numerical methods and their application in economics and econometrics. Topics will typically include: iterative fixed point methods, methods for solving problems of nonlinear equations, methods for solving initial value problems and boundary value problems, Monte Carlo methods, resampling techniques, and Gibbs sampling.

ECON 550  Units: 1.5
Game Theory in Economics
Provides a game theoretic perspective on interactions between economic agents, covering a variety of game-theoretic modelling techniques and their applications. Topics will generally include: normal and extensive form games; Nash equilibrium and refinements; repeated and sequential games; learning and evolution in games; the Nash bargaining solution; and co-operative games.

ECON 551  Units: 1.5
Information and Incentives
Introduction to the incentive problems that arise from asymmetric information in a game-theoretic framework. Assumes a knowledge of basic game theory. Topics covered include moral hazard, adverse selection and mechanism design, illustrated in the context of applications drawn from a variety of areas, including industrial organization, public economics and labour.

ECON 552  Units: 1.5
Macroeconomic Issues
An exploration of contemporary macroeconomic issues using advanced modelling techniques. Topics may include: search and matching theory; unemployment; endogenous innovation; worker displacement due to technological change; the macroeconomic implications of imperfect competition; international macroeconomics; multiple equilibria; coordination; stability; inflation; and finance issues.

ECON 556  Units: 1.5
Experimental Economics
An introduction to the theory and practice of experimental economics using laboratory and field experiments. Topics include: state of the art methods in experimental economics including experimental design, subject sampling, laboratory techniques, and the use of financial incentives. The objectives will be pursued through the development of experiments and a review of the method’s application to a number of topics of interest to economists.

ECON 565  Units: 1.5
The Econometrics of Cross-Section Data
An overview of the models, estimation techniques and tests used when analyzing cross-section data. The methods studied are particularly applicable to labour and health economics and industrial organization. Theory and empirical applications are covered. Topics may include binary and multinomial logit and probit models, limited dependent variable models, count data, and duration analysis.

ECON 575  Units: 1.5
Advanced Topics in Econometrics
Advanced topics in econometric theory and practice. Topics may include: recent developments in time-series analysis; estimation and testing with panel data; the use of nonparametric and semiparametric techniques; limited and qualitative dependent variables models; modelling financial data; switching-regimes models; specification analysis and model selection, and applications of Bayesian inference.

ECON 595  Units: 1.5
Directed Studies in Economics
Individual titles will be assigned to each lettered section A-Z. Note: Pro Forma required.

ECON 598  Units: 3.0
Extended Essay
Grading: INP, COM, N, F.

ECON 599  Units: 4.5
Thesis
Grading: INP, COM, N, F.

ECON 693  Units: 3.0
PhD Candidacy Examinations
Students enrol in ECON 693 for the duration of their preparation for candidacy examinations. This begins at the time a student first enrols in the PhD program and continues until candidacy requirements have been completed.
Grading: INP, COM, N, F.

ECON 694  Units: 1.5
Scholarship Skills Seminar
Focus on developing essential skills such as writing, presenting, developing research proposals, critically reading research, writing a literature review, refereeing papers, writing grant proposals, avoiding plagiarism, and submitting articles for publication.
Note: Students admitted to MA and other PhD programs may request permission to register in the course.
Prerequisite(s): Admission to MA or other PhD programs; or permission of the department.

ECON 699  Units: 21.0-33.0
Dissertation
Prerequisite(s): ECON 693.
Grading: INP, COM, N, F.

ED-D 500  Units: 1.5
Learning Principles
A survey of the literature on commonly stated principles of instrumental and classical conditioning, generalization, transfer and retention.

ED-D 501  Units: 1.5
Theory of Measurement
A study of the main psychometric theories, concepts and procedures associated with the development and analysis of educational and psychological measurement, and the application of these to the development and use of tests in educational and research situations.

ED-D 503  Units: 1.5
Program Development and Evaluation
An examination of the issues, practices, and methods of program evaluation at the institutional, organizational, and classroom levels.
Prerequisite(s):
• Admission to MA program in Counselling Psychology; or
• permission of the department.

ED-D 505  Units: 1.5
Advanced Concepts in Human Development
A seminar on the science of human development from early childhood through emerging adulthood.

ED-D 506A  Units: 1.5
Cognitive Development
A survey of what is currently known about cognitive development in the first two decades of life. Topics may include biological bases of cognition, perception, memory, conceptual thought, social cognition, language, reading, mathematics, scientific thinking and intelligence.

ED-D 506B  Units: 1.5
Social and Emotional Development
A seminar with an in-depth focus on social-emotional development and learning. Topics covered may include neurobiological bases, temperament, attachment, theory of mind, self and emotion regulation, family, peer, school, and cultural influences.

ED-D 506C  Units: 1.5
Adolescent Development
A seminar with an in-depth focus on adolescence. Pubertal, neurobiological, familial, social, educational, cultural, and historical influences are explored.

ED-D 508  Units: 1.5
Theories of Learning in Educational Psychology
An examination of psychological interpretations of learning from modern behaviourist and cognitive approaches to contemporary conceptions of learning.
ED-D 509  Units: 1.5  
**Psychology of Learning and Instruction**  
An in-depth analysis of selected issues and contemporary research in the application of psychology to instruction including problem solving, learning processes and strategies and instructional interventions.

ED-D 514  Units: 1.5  
**Assessment in Counselling**  
The use of testing, diagnosis, and other aspects of assessment within a counselling perspective for adults, adolescents and children. Topics addressed include: basic concepts in assessment, the relationship between counselling and assessment, ethical issues, diversity, reliability and validity, test selection and administration, test evaluation, a variety of assessments and assessment reports.  
**Notes:**  
- Credit will be granted for only one of ED-D 514, ED-D 591 (if taken in the same topic).  
- Students who have Counselling or related background may request permission to register in the course.  
**Prerequisite(s):**  
- Admission to MA program in Counselling Psychology; or  
- permission of the department.

ED-D 515  Units: 1.5  
**Advanced Assessment in Special Education**  
An intensive course specializing in Level B assessment techniques and intervention-based academic assessment methods, including curriculum-based measurement, to support the educational programming of students with special needs.  
**Prerequisite(s):**  
- Admission to MA or MEd in Educational Psychology/Masters program in Special Education; or  
- permission of the department.

ED-D 516  Units: 1.5  
**Advanced Intervention in Special Education**  
An intensive course specializing in academic interventions for students with special needs. Intervention design, implementation, and monitoring will be involved within the context of special education service delivery.  
**Prerequisite(s):**  
- ED-D 515; or  
- permission of the department.

ED-D 518  Units: 1.5  
**Advanced Seminar in Theories of Counselling Psychology**  
Contemporary theories and approaches to counselling and psychotherapy for individuals, couples, and families across the lifespan.  
**Prerequisite(s):**  
- Admission to MA program in Counselling Psychology; or  
- permission of the department.

ED-D 519A  Units: 1.5  
**Child and Adolescent Development and Counselling**  
A study of issues and counselling interventions with children and adolescents. Topics include developmental context; identity; assessment; counsellor roles; consultation with teachers, other professionals and parents or guardians; family issues; career/educational planning; and individual and group interventions.  
**Note:** Credit will be granted for only one of ED-D 519A, ED-D 591 (if taken in the same topic).  
**Prerequisite(s):**  
- Admission to MA program in Counselling Psychology; or  
- permission of the department.

ED-D 519B  Units: 1.5  
**Ethics and Legal Issues in Counselling**  
An examination of professional, ethical, and legal issues related to practice and research in counselling. Personal beliefs, values, and biases will be examined, as well as the professional codes and literature of the discipline.  
**Note:** Credit will be granted for only one of ED-D 519B, ED-D 591 (if taken in the same topic).  
**Prerequisite(s):**  
- Admission to MA program in Counselling Psychology; or  
- permission of the department.

ED-D 519C  Units: 1.5  
**Creative Arts Therapy**  
The study and practice of creative and artistic approaches to counselling. Specific focus may include counselling using art, movement, writing, play, drama and bibliotherapy.  
**Note:** Credit will be granted for only one of ED-D 519C, ED-D 591 (if taken in the same topic).  
**Prerequisite(s):**  
- Admission to MA program in Counselling Psychology; or  
- permission of the department.

ED-D 519D  Units: 1.5  
**Indigenous Development and Counselling across Generations**  
Indigenous concepts and theories of development and growth across the lifespan. Exploration of intergenerational models of development and identity. Topics include child, adolescent and adult growth and change in family, community, and work contexts.  
**Note:** Credit will be granted for only one of ED-D 519D, ED-D 591 (if taken in the same topic).  
**Prerequisite(s):**  
- Admission to MA program in Counselling Psychology; or  
- permission of the department.

ED-D 519E  Units: 1.5  
**Group Counselling**  
The conceptualization and practice of group counselling and therapy. Leadership skills will be examined. Particular attention will be given to leadership skills and exploring the foundations and application of experiential learning in groups.  
**Note:** Credit will be granted for only one of ED-D 519E, ED-D 591 (if taken in the same topic).  
**Prerequisite(s):**  
- Admission to MA program in Counselling Psychology; or  
- permission of the department.

ED-D 519F  Units: 1.5  
**Diversity, Culture, and Counselling**  
Theory and practice of counselling diverse clientele. Specific emphasis on awareness, knowledge and strategies for developing cultural competencies.  
**Note:** Credit will be granted for only one of ED-D 519F, ED-D 591 (if taken in the same topic).  
**Prerequisite(s):**  
- Admission to MA program in Counselling Psychology; or  
- permission of the department.

ED-D 519G  Units: 1.5  
**Trauma Counselling**  
Theoretical and practical understanding of issues related to treatment of psychological trauma. Topics typically include definitions, safety/stabilization, symptoms, disorders, assessment/diagnosis and outcomes.  
**Note:** Credit will be granted for only one of ED-D 519G, ED-D 591 (if taken in the same topic).  
**Prerequisite(s):**  
- Admission to MA program in Counselling Psychology; or  
- permission of the department.

ED-D 519H  Units: 1.5  
**Career Development and Counselling Across the Lifespan**  
Lifespan and career development as a dynamic and holistic enterprise. Theories and techniques of career development, assessment, and consultation are explored. The practice of career counselling for diverse populations including work-related issues.  
**Note:** Credit will be granted for only one of ED-D 519H, ED-D 591 (if taken in the same topic).  
**Prerequisite(s):**  
- Admission to MA program in Counselling Psychology; or  
- permission of the department.

ED-D 519I  Units: 1.5  
**Addictions Counselling**  
A study of addictive behaviour and the change process to understand how addictions develop and how addicted people recover. Topics include concepts and theories of addiction, brain physiology, specific substance and process addictions, controversies, challenges, interventions and treatments for addiction in counselling contexts.  
**Note:** Credit will be granted for only one of ED-D 519I, ED-D 591 (if taken in the same topic).  
**Prerequisite(s):**  
- Admission to MA program in Counselling Psychology; or  
- permission of the department.
**ED-D 520**  
**Units:** 1.5  
**Educational Research Apprenticeship**  
An individualized opportunity for students to develop their research skills by assisting with faculty research or engaging in their own research. Students are expected to spend a minimum of 9 hours a week participating in research activities. Includes a range of potential activities, including but not limited to: data collection, coding, and entering; management of computerized databases; completion of ethics applications; analysis of data; literature search and review; and preparation of materials for publication.  
**Note:** Students may repeat this course, but credit will be granted only once.  
**Prerequisite(s):**  
- Admission to an EPLS Masters program; or  
- permission of the department.  
**Grading:** INP, COM, N, F.

**ED-D 521**  
**Units:** 1.5  
**Developmental Issues in Family Counselling**  
Theoretical approaches, developmental issues and intervention strategies related to family counselling with diverse clientele. Through discussion, experiential activities, and role playing, students will become familiar with current concepts and techniques.  
**Prerequisite(s):**  
- ED-D 522 or permission of the department; and  
- admission to MA program in Counselling Psychology; or  
- permission of the department.

**ED-D 522**  
**Units:** 3.0  
**Skills and Practice for Counselling**  
Provides basic counselling interventions with an emphasis on the therapeutic relationship. Extensive opportunity to role play and to self-reflect on role as counsellor and issues related to boundaries and power. Sequenced skill training, with extensive counselling simulation and supervision of practice in a field setting. Includes direct client contact under the supervision of a qualified professional with diverse client populations.  
**Note:** Students may repeat this course until practicum hourly requirements are met but credit will be granted only once.  
**Prerequisite(s):** Admission to MA program in Counselling Psychology.  
**Corequisite(s):** Either ED-D 518 and ED-D 519N, or ED-D 519C and ED-D 519L.  
**Grading:** INP, COM, N, F.

**ED-D 523**  
**Units:** 3.0  
**Internship in Counselling**  
Provides intensive practice in advanced counselling techniques and approaches under the supervision of a professional counsellor in community settings. Lectures focus on case presentations, models of consultation, supervisor-supervisee relationship, roles and responsibilities of health professionals, counsellor identity, professional organizations, record keeping. Two term course.  
**Notes:**  
- Students may repeat this course until practicum hourly requirements are met but credit will be granted only once.  
- Enrolment is limited due to availability of placements.  
**Prerequisite(s):**  
- ED-D 522; and  
- admission to MA program in Counselling Psychology.  
**Grading:** INP, COM, N, F.

**ED-D 524**  
**Units:** 1.5  
**Facilitation of Counselling Practicum**  
Preparation for future work as trainer, facilitator, or instructor through practice in facilitating 414 or 417 under the supervision of course instructor. Integration of theory and practice of helping, development of skills through modelling, observing, and coaching, enhancement of relationship and group processes.  
**Notes:**  
- May be taken more than once to include facilitation practicum with both a ED-D 414 and ED-D 417 instructor normally to a maximum of 3 units.  
- Cannot be used to fulfill elective requirements for program.  
**Prerequisite(s):** Admission to MA program in Counselling Psychology.  
**Grading:** COM, N, F.

**ED-D 525**  
**Units:** 1.5  
**Indigenous Healing and Spirituality**  
Indigenous values, worldviews, and spirituality as the foundation for helping and healing. Topics include traditional knowledge, holistic healing, role of elders, and Indigenous spiritual practices.  
**Prerequisite(s):**  
- Admission to a master’s program in Indigenous Communities Counselling; or  
- permission of the department.  
**Grading:** COM, N, F.

**ED-D 531**  
**Units:** 1.5 or 3.0  
**Concepts and Theory of Organization**  
Critical examination of the classical, modern, and emerging literature of administrative studies in the organizational context, with emphasis on philosophy of leadership, decision making processes, power and authority, leadership studies, and contemporary issues and perspectives.  
**Note:** Credit will be granted for only one of ED-D 531, ED-B 531.

**ED-D 532A**  
**Units:** 1.5  
**Formerly part of ED-D 532**  
**Educational Program Leadership**  
Models for program design and review range from external, objective-based processes to participatory action research. Examines issues of implementation, collaboration, accountability, inclusiveness and responsiveness to community. Offers practical experiences in a range of evaluative methods.  
**Note:** Credit will be granted for only one of ED-D 532A, ED-D 532B, ED-B 532.

**ED-D 533A**  
**Units:** 1.5  
**Politics and Policy-Making in Organizations**  
An examination of politics in educational and related organizations: concepts of influence, authority, power, and control; frameworks for analyzing and understanding politics and policy; actors and agendas; interest and pressure groups; conflict and conflict resolution; the interface of leadership and politics; implications for governance and administrative practice.  
**Note:** Credit will be granted for only one of ED-D 533A, ED-B 533A.

**ED-D 533B**  
**Units:** 1.5  
**Decision-Making and the Law**  
Develops awareness of the legal considerations and principles which apply to decision-making in school and other workplaces. Contains introductions to the interface between law, legislation and policy, statutes and the delegation of powers to decide, and the common law principles which govern decision-making by those with statutory authority. An array of case studies is used.  
**Note:** Credit will be granted for only one of ED-D 533B, ED-B 533B.

**ED-D 533C**  
**Units:** 1.5  
**Servant Leadership**  
An inquiry into the philosophy of servant-leadership as a vehicle for the development of moral literacy in democratic, caring, serving institutions with an investment in the common good.  
**Note:** Credit will be granted for only one of ED-D 533C, ED-D 591 (if taken in the same topic).

**ED-D 533D**  
**Units:** 1.5  
**Critical Discourses in Leadership**  
An examination of general leadership concepts, and practices as they apply to educational institutions, other workplaces, organizations and the community.  
**Note:** Credit will be granted for only one of ED-D 533D, ED-B 533D, ED-B 537C.

**ED-D 534**  
**Units:** 1.5 or 3.0  
**Leadership for School Improvement**  
Surveys contemporary thinking about professional learning communities and learning teams, emphasizing how leaders can build and support collaborative and inclusive learning environments in order to effect positive school change.  
**Note:** Credit will be granted for only one of ED-D 534, ED-B 534.

**ED-D 535**  
**Units:** 1.5  
**Global Comparative Perspectives on Leadership and Education**  
Explorations of diverse leadership and education theories and practices in school, institutions, workplaces, and/or community across Canada and around the world.  
**Note:** Credit will be granted for only one of ED-D 535, ED-D 535A, ED-D 535B.

**ED-D 536**  
**Units:** 1.5 or 3.0  
**Philosophy of Leadership**  
An examination of the relevant interaction of philosophy and leadership, with a view to clarifying philosophical concepts and theories and their application to the analysis, by individuals in leadership positions, of their own and others’ actions.  
**Note:** Credit will be granted for only one of ED-D 536, ED-B 536.

**ED-D 537A**  
**Units:** 1.5 or 3.0  
**Educational Change**  
An analysis of change theory and the processes associated with change in education, with a view to assisting school leaders to facilitate reforms.  
**Note:** Credit will be granted for only one of ED-D 537A, ED-B 537A.
ED-D 537D  Units: 1.5 or 3.0  
**Instructional Supervision**  
Through an analysis of literature in leadership, communication, change and activation, as well as through an analysis of classroom observation techniques, the development of rational organizational patterns of supervision for educational administrators.  
**Note:** Credit will be granted for only one of ED-D 537, ED-D 538, ED-D 591 (if taken in the same topic).

ED-D 537G  Units: 1.5 or 3.0  
**Leadership in Educational Administration**  
Analysis of the roles and functions of the school principal, with emphasis upon educational leadership, understanding the breadth and diversity of the position, legal status, designated administrative and managerial responsibilities, and contemporary challenges.  
**Note:** Credit will be granted for only one of ED-D 537, ED-D 538, ED-D 591 (if taken in the same topic).

ED-D 538A  Units: 1.5  
**Critical Theories and Practices of Adult Education and Learning**  
Explores theories and practices of adult education within the contexts of social, cultural, political, gender, and ecological justice and change.  
**Note:** Credit will be granted for only one of ED-D 538A, ED-D 538, ED-D 591 (if taken in the same topic).

ED-D 538B  Units: 1.5  
**Cultural Leadership and Social Learning through the Arts**  
An exploration of the historical and contemporary contributions of arts-based education activities to cultural leadership, activism, and social justice and change across Canada and world-wide.  
**Note:** Credit will be granted for only one of ED-D 538A, ED-D 538, ED-D 591 (if taken in the same topic).

ED-D 538D  Units: 1.5  
**Community and Cultural Leadership**  
Focuses on theories and practices of community and cultural leadership, activism in organizations and institutions in Canada and internationally.  
**Note:** Credit will be granted for only one of ED-D 538D, ED-D 538, ED-D 591 (if taken in the same topic).

ED-D 539A  Units: 1.5  
**Leadership, Learning and Social Justice**  
Concepts of social justice and their relationship to leadership in schools, institutions and organizations and community. Focuses on issues of race/ethnicity, gender, class, sexual orientation and ability as enacted in everyday practice. Conceptions of democracy, privilege, power, and citizenship are central. Discussions extend to ecological and global issues of social justice.

ED-D 539B  Units: 1.5  
**Leadership, Education and Diversity**  
An exploration of the social, cultural, and political complexity of contemporary education in a pluralistic society. Focuses on issues of racism, homophobia, sexism, ableism and how they affect schools, workplaces, and/or communities and society as a whole.  
**Note:** Credit will be granted for only one of ED-D 539B, ED-D 591 (if taken in the same topic).

ED-D 540  Units: 1.5  
**Gender, Leadership and Learning**  
Explores leadership through the lenses of feminism, inter-sectionalities, trans and masculinities discourses in diverse contexts such as trans, LGBTQ and women’s movement(s), the voluntary sector, community organizations and government.  
**Note:** Credit will be granted for only one of ED-D 540, ED-D 591 (if taken in the same topic).

ED-D 541  Units: 1.5  
**Leadership in Rural Education**  
An examination of the historical contexts, unique issues, and recent developments surrounding leadership in rural and remote education, globally, nationally, and provincially, including First Nations. Focus is on issues of equitable educational opportunities, recruitment and retention of educators, multi-grade classes, professional isolation, and demands of community-based lifestyle and the benefits of technology. The dearth of rural education research is explored.  
**Note:** Credit will be granted for only one of ED-D 541, ED-D 591 (if taken in the same topic).

ED-D 542  Units: 3.0  
**A Comprehensive Investigation of Servant Leadership**  
An inquiry, identification and examination of the servant leadership-followership philosophy in all formal educational and community organizations. Servant leadership-followership is a vehicle for the development of moral literacy in democratic, caring institutions and an investment toward the common good.  
**Note:** Credit will be granted for only one of ED-D 542, ED-D 533C, ED-D 591 (if taken in the same topic).

ED-D 560  Units: 1.5  
**Statistical Methods in Education**  
An introduction to descriptive and inferential statistics to provide the understanding and competence to read and interpret the statistics reported in relevant research and to be able to conduct analyses on educational research data.

ED-D 561A  Units: 1.5  
**Methods in Educational Research**  
An introduction to quantitative and qualitative research designs, the research process, the selection and design of data collection instruments and methods, writing and reporting findings, and systematically evaluating and critiquing the quality of research studies. Useful for students preparing to conduct thesis research as well as students who wish to become better readers and consumers of research.  
**Note:** Credit will be granted for only one of ED-D 561A, ED-D 561.

ED-D 561B  Units: 1.5  
**Research Methods in Leadership**  
Designed to prepare students in Leadership Studies to undertake independent, scholarly research so that they might fulfill the research requirements for the MEd degree in Leadership Studies. Students will become familiar with different lines of inquiry, appropriate methodologies, proposal preparation and the ethics involved in doing research. Other graduate level research methods courses may be substituted with permission from the Graduate Adviser.  
**Prerequisite(s):**  
- Admission to MA or MEd in Educational Psychology Masters program in Leadership Studies; or  
- permission of the department.

ED-D 562  Units: 1.5  
**Advanced Statistical Methods in Education**  
To advance understanding of and competence in handling multivariate data - both the manipulation of data files for use within a statistical program, and the use of statistical programs for exploratory and inferential analyses such as regression, MANOVA and factor analysis.  
**Note:** Students who have completed equivalent prerequisites may request permission to register in the course.  
**Prerequisite(s):**  
- ED-D 560; or  
- permission of the department.

ED-D 563  Units: 1.5  
**Qualitative Research Methods**  
Introduction to various modes of qualitative inquiry; identification and examination of qualitative research methods in a variety of contexts and settings.  
**Note:** Credit will be granted for only one of ED-D 563, ED-D 539B.

ED-D 564  Units: 1.5  
**Indigenous Research and Program Evaluation**  
Indigenous worldviews, approaches to research, methodologies, practices and protocols are examined within the context of Indigenous community engagement. Specific topics include community partnerships, research ownership, research process, program evaluation, methods and outcomes. Ethics, reciprocity, and culturally respectful research will be explored.  
**Prerequisite(s):**  
- Admission to a master’s program in Indigenous Communities Counselling; or  
- permission of the department.

ED-D 568  Units: 1.5  
**Inclusive Education in the 21st Century**  
A consideration of historical perspectives and present trends in Special Education theory and practice. Topics considered include the context of special education, economic and legislative issues, families, classification and other assessment issues, teaching practices, social competency, early intervention, quality of life, and ethical and policy issues.  
**Note:** Credit will be granted for only one of ED-D 568, ED-D 566A.
ED-D 569  Units: 1.5
Developmental Psychopathology and Disorders
Empirical and theoretical approaches to childhood disorders, including issues in their classification, etiology, developmental course, and presentation within the school setting. Emphasis will be placed on thinking about childhood disorders within both a developmental and school context. Assessment profiles and intervention strategies will be discussed.
Note: Credit will be granted for only one of ED-D 569, ED-D 566B.

ED-D 570  Units: 1.5
Self-Regulated Learning
An examination of contemporary theory and research about self-regulated learning and learning strategies, computer-based instructional tools and environments for promoting self-regulated learning, and regulation of learning in collaborative contexts.
Notes:
- Credit will be granted for only one of ED-D 570, ED-D 591 (if taken in the same topic).
- Students who complete this course may be eligible to apply for a lab instructor position for ED-D 101 (Learning Strategies for University Success).

ED-D 571  Units: 1.5
Advanced Assistive Technology in the Inclusive Classroom
Focuses on the research and application of a range of assistive technologies, assessment frameworks, instructional approaches and strategies, and resources to support active student engagement and participation in inclusive classrooms.
Note: Credit will be granted for only one of ED-D 571, ED-D 591 (if taken in the same topic).

ED-D 590  Units: 1.5-3.0
Directed Studies in Educational Psychology and Leadership Studies
Note: May be taken more than once for credit in different topics with permission of the department to a maximum of 4.5 units; however, no more than 3 units of credit from the same instructor will be accepted except under exceptional circumstances.

ED-D 591A  Units: 1.5
Selected Topics Learning, Development and Instructional Sciences
Note: May be taken more than once for credit in different topics.

ED-D 591B  Units: 1.5
Selected Topics Measurement, Evaluation and Computer Applications
Note: May be taken more than once for credit in different topics.

ED-D 591C  Units: 1.5
Selected Topics in Special Education
Note: May be taken more than once for credit in different topics.

ED-D 591D  Units: 1.5
Selected Topics in Counselling
Note: May be taken more than once for credit in different topics.

ED-D 591E  Units: 1.5
Selected Topics in Leadership Studies
Note: May be taken more than once for credit in different topics.

ED-D 597  Units: 1.5
Comprehensive Examination - Educational Psychology and Leadership Studies
A required element of all MEd programs. Typically held within one month of completion of all coursework. Examination format may be either written or oral, as decided upon by the program supervisor in consultation with the candidate. Areas of examination and examiners are established by each program area (counselling, educational psychology, special education, leadership studies).
Grading: INP, COM, N, F.

ED-D 598  Units: 3.0
Project - Educational Psychology and Leadership Studies
Evidence of independent research work in the form of a project, extended paper(s), work report, etc., as determined within the department. Planned and carried out with a project supervisor.
Grading: INP, COM, N, F.

ED-D 599  Units: 6.0
Thesis - Educational Psychology and Leadership Studies
Grading: INP, COM, N, F.

ED-D 600  Units: 1.5
Learning and Teaching in Higher Education
Explores instructional research and contemporary practices in higher education. Topics include using effective teaching strategies, developing course curriculum, and exploring various instructional models and media. Content is guided by recent research in the psychology of learning and instruction.
Notes:
- Students who are not in the LATHE Program and wish to spend approximately 9-10 hours a week participating in research activities. The apprenticeship typically involves a range of activities including organization and training of research assistants, submission of an ethics application, management of research databases, data analysis, and preparation and submission of materials for publication and/or presentation.

ED-D 605  Units: 3.0
Educational Psychology: Apprenticeship in Teaching in Higher Education
Explores research and rhetoric associated with numerous models of instruction found frequently in post-secondary contexts such as lecture, recitation, small-group discussion and on-line learning. As each instructional model is examined, students will practice supporting instructional skills and strategies.
Prerequisite(s): Admission to Graduate Certificate in LEARNING and TEACHING in Higher Education (LATHE).
Grading: INP, COM, N, F.

ED-D 610  Units: 1.5
Contemporary Issues in Higher Education
Critically examines the problems and issues that dominate current thought and discussion in higher education in Canada and internationally. Topics considered will include globalization and internationalization, university governance, teaching and learning, the nature of academic work, corporatization of postsecondary institutions, credentialism, and relations between higher education and the state.
Prerequisite(s): Permission of the department.

ED-D 614  Units: 1.5
University Teaching
An extensive review of research and instructional practices at the post-secondary level. Topics include models of instruction, teaching strategies, course development principles, and assessment practices.
Prerequisite(s): Admission to a graduate program.

ED-D 615  Units: 1.5 or 3.0
Individual Apprenticeship in University Teaching
Students undertake an individualized apprenticeship experience with a sponsoring faculty member. The broad aim of the apprenticeship is to offer students guided practice in university instruction.
Note: May be taken more than once for credit in different topics with approval of the student's supervisory committee.
Prerequisite(s): Admission to a graduate program.
Grading: COM, N, F.

ED-D 620  Units: 1.5
Educational Psychology: Doctoral Apprenticeship in Research
Individualized opportunity for doctoral students to develop advanced research skills by apprenticing in faculty research or extra-to dissertation research. Students are expected to spend approximately 9-10 hours a week participating in research activities. The apprenticeship typically involves a range of activities including organization and training of research assistants, submission of an ethics application, management of research databases, data analysis, and preparation and submission of materials for publication and/or presentation.
Note: Students may repeat this course, but credit will be granted only once.
Prerequisite(s):
- Admission to a doctoral program; or
- permission of the department.
Grading: INP, COM, N, F.

ED-D 660  Units: 1.5
Doctoral Seminar in Contemporary Issues in Educational Psychology
A seminar for doctoral students examining contemporary issues in educational psychology. Attention is also given to guidelines for scholarly and professional practice.

ED-D 690  Units: 1.5-3.0
Advanced Directed Studies in Educational Psychology
Note: May be taken more than once for credit in different topics with permission of the department to a maximum of 4.5 units; however, no more than 3 units from the same instructor will be accepted except under exceptional circumstances.
ED-D 691 Units: 1.5 or 3.0
Advanced Special Topics in Educational Psychology
The content of these courses varies depending upon student interests and faculty areas of expertise. Courses often focus on timely issues and topics in the field.
Note: May be taken more than once for credit in different topics.

ED-D 693 Units: 3.0
Doctoral Candidacy Exam in Educational Psychology
PhD students write candidacy examinations in research methodology and in their area of focus within educational psychology. The format will consist of two written papers followed by an oral examination. In the oral examination, the candidate will be examined in both research methodology and his/her area of focus.
Normally, within thirty months of registration as a provisional doctoral student and at least six months before the final oral examination, a student must pass the candidacy examination.
Grading: INP, COM, N, F.

ED-D 699 Units: 30.0
PhD Dissertation
Prerequisite(s): ED-D 693.
Grading: INP, COM, N, F.

EDCI

Curriculum and Instruction Studies

Department of Curriculum and Instruction
Faculty of Education

EDCI 510 Units: 1.5
Research Issues and Studio Development in Art
Review of contemporary art education research issues; development of a teaching creed and proposal; studio exploitation linked to current instructional practice.
Note: Credit will be granted for only one of EDCI 510, ED-A 570.

EDCI 511 Units: 1.5 Hours: 3-0-0
Research in Drawing and Studio Development
Review of literature on the development of drawing; analysis of theory and current teaching practices; an investigation of ideas and approaches through actual engagement in drawing.
Note: Credit will be granted for only one of EDCI 511, ED-A 571.

EDCI 512A Units: 1.5
Formerly: half of EDCI 512
Digital Arts
An extensive exploration of digital studio processes focusing on visual expression, graphics, and fine art. Working in the digital studio, students will learn to generate creative ideas, collect resources, produce artwork, and integrate digital and traditional processes using industry-standard software packages. Emphasis on the production and teaching of digital arts for creative, educational and studio environments. No previous computer experience is required.
Note: Credit will be granted for only one of EDCI 512A, EDCI 512.

EDCI 512B Units: 1.5
Formerly: half of EDCI 512
Digital Presentation
An extensive exploration of the tools and processes used in presenting studio media in digital formats. Students will learn how to optimize existing studio materials, processes, ideas, and resources into dynamic presentation structures using still/motion visuals, text and audio. A strong focus will be given to the production formats required for final graduate presentations.
Note: Credit will be granted for only one of EDCI 512B, EDCI 512.

EDCI 513 Units: 3.0
Community Art Education
Issues related to community art programs that play a role in sociocultural development and raising awareness about aesthetics.

EDCI 514 Units: 1.5
Educational Discourses
An opportunity for engagement in the research community, advancing the development of student’s own capacity for research, and a critical examination of contemporary literature on functional educational concepts, research issues and implications for curriculum and instruction.

EDCI 515 Units: 1.5
e-Research: Harnessing and Understanding Technology in Research
A blended multi-media/research course that focuses on relevant issues involved in using information and communication technologies (ICT) and the Internet for research purposes. In addition to developing some foundational skills, students will learn about methods, techniques, as well as ethical and practical issues.
Note: Credit will be granted for only one of EDCI 515, ED-B 515.

EDCI 517 Units: 1.5
Formerly: EDCI 542A
Reading Processes in the School Curriculum: Research and Processes
Examines and analyzes research and models of reading, and the processes of reading and reading development.
Note: Credit will be granted for only one of EDCI 517, EDCI 542A, EDCI 542, ED-B 542.

EDCI 518 Units: 1.5
Formerly: EDCI 540A
Research in Language and Literacy: Curriculum Development
A critical analysis of theories and research related to curriculum development and implementation in language and literacy.
Note: Credit will be granted for only one of EDCI 518, EDCI 540, EDCI 540A, ED-B 540.

EDCI 520 Units: 1.5 or 3.0
Seminar in Contemporary Educational Issues in Philosophical Perspective
A survey of issues selected from leading contemporary thinkers and how they relate to the basic values, purposes and problems of education.
Note: Credit will be granted for only one of EDCI 520, ED-B 520.

EDCI 521 Units: 1.5
Contemporary Educational Issues in Historical Perspective
Historical examination of significant educational writings, the social context in which they were written, and their influence on contemporary educational issues. Special emphasis is placed on writings that illuminate themes of educational change and that illustrate the relationship between the character of a society and the nature of its educational institutions.
Note: Credit will be granted for only one of EDCI 521, EDCI 521A, EDCI 521B, ED-B 521A, ED-B 521B.

EDCI 523 Units: 1.5
Diverse Voices and Visions in Education
An examination of diverse educational and cultural perspectives in education and ways of knowing not usually encompassed in other courses. Students will explore how these diverse perspectives shape, challenge, and enrich established educational methodologies.

EDCI 531 Units: 1.5
Introduction to Curriculum as Discourse
An overview of the field of curriculum studies from the early 20th century forward. Invites students to reflect on implications of curriculum as discourse within their own educational concepts and practices and to imagine new possibilities.
Note: Credit will be granted for only one of EDCI 531, EDCI 531A, EDCI 531B, ED-B 555A, ED-B 555B.

EDCI 532 Units: 1.5
Emerging Trends and Topics in Curriculum Studies
An examination of recent publications, presentations and conference proceedings to identify and discuss emerging trends and topics in the field of curriculum studies.

EDCI 533 Units: 1.5
Theory and Practice in Curriculum Design and Change
Description of traditional and alternative approaches to curriculum planning and implementation in terms of origins, underlying assumptions, utility in various settings and effects. Invites students to identify and characterize their own approaches to curriculum planning and implementation.
Note: Credit will be granted for only one of EDCI 533, ED-B 536, ED-B 557.

EDCI 536 Units: 1.5
Language Processes in the School Curriculum: Oracy
An examination of processes through which competence in listening and speaking is developed. Includes analysis of research, methods and materials relevant to oracy.
Note: Credit will be granted for only one of EDCI 536, EDCI 543, EDCI 543A, ED-B 543.

EDCI 546 Units: 1.5
Learners Research
A critical review of research methodologies used in the general area of language arts. Consideration of the appropriateness of specific methodologies to research in classroom problems.
Note: Credit will be granted for only one of EDCI 546, ED-B 546.
EDCI 548  Units: 1.5  Development and Implementation of the Curriculum  Application of relevant theories and models to the design and development of school curricula in a specific area.  
**Note:** Credit will be granted for only one of EDCI 548, EDCI 548A, EDCI 548B, EDCI 548C, ED-B 558.

EDCI 549  Units: 1.5  Gender and Pedagogy  Draws upon historical and contemporary perspectives to provide lenses for analyzing various research issues and concerns in relation to educational policy and classroom practice. Inclusion and transformation are critical elements of the concepts developed in this course. Issues of gender influencing educational policy and practices will be examined, including areas such as curriculum development, teaching strategies, selection of curricular materials, professional interactions, and selection of teaching specialty areas.  
**Note:** Credit will be granted for only one of EDCI 549, EDCI 591 (if taken in the same topic).

EDCI 550  Units: 1.5  Seminar: Research in Early Childhood Education  Analysis, interpretation, and evaluation of selected research in early childhood education through study of its conceptual and methodological bases.  
**Note:** Credit will be granted for only one of EDCI 550, ED-B 550.  
**Prerequisite(s):**  
1. 1.5 units of EDCI course numbered 500 or higher, or  
2. permission of the department.

EDCI 551  Units: 1.5  The Young Child in Today's Society  An exploration of topics related to young children (birth through age 9) and their education in the context of Canadian society. Addresses several major questions, including: Who are today’s young children? What are the issues and challenges facing Canadian children and families? How can early childhood programs address these challenges?  
**Note:** Credit will be granted for only one of EDCI 551, ED-B 551.

EDCI 552  Units: 1.5  Contemporary Trends in Early Childhood Education  An examination of perspectives that influence early childhood education in national and international contexts. Topics include: the inclusion of children’s knowledge in early childhood settings; the potential role of families in early years’ programming; the creation of programs that support children’s holistic development; the impact of cultural values on young learners; and the commonalities and differences of global, early learning settings.  
**Note:** Credit will be granted for only one of EDCI 552, ED-B 552.

EDCI 554  Units: 1.5  Comparative Early Childhood Education: Curriculum, Context and Culture  Analysis and evaluation of approaches to curriculum, administration, and assessment in programs for preschool, kindergarten, and primary-aged children in cross-cultural contexts.  
**Note:** Credit will be granted for only one of EDCI 554, ED-B 549.

EDCI 556  Units: 1.5  Language Processes in the School Curriculum: Writing and Representing  An examination of processes through which skills and competence in composition are developed. Includes analysis and evaluation of research, methods and materials relevant to instruction in composition.  
**Note:** Credit will be granted for only one of EDCI 556, EDCI 543, EDCI 543B, ED-B 543.

EDCI 558  Units: 1.5  Differentiated Instruction: Needs of Diverse Learners  Examines research and practice of differentiated instruction across the curriculum, with an emphasis on literacy at all levels. Investigates the philosophy and theory behind differentiated instruction and exemplary practices. Focuses on flexibility in how curriculum content, processes and representations of knowledge are designed within a differentiated model. Discussion of differentiated instructional models in relation to current trends in Canadian curriculum.  
**Note:** Credit will be granted for only one of EDCI 558, EDCI 591 (if taken in the same topic).

EDCI 559  Units: 1.5  EDUCoaching for Technology Integration  An exploration of principles and models of educational change through professional development coaching within the context of technology adoption theories. Students will actively coach or be coached during this course.

EDCI 565  Units: 1.5  Research and Practice of Learning Design  An in-depth look at the research and practice of learning design and its application to technology-enabled interactive learning environments. Students will critically examine theories and principles of learning design; explore how they can maximize the effectiveness, efficiency and appeal of learning experiences for learners; and teach for understanding.

EDCI 566  Units: 1.5  EDUCoaching for Technology Integration  An exploration of principles and models of educational change through professional development coaching within the context of technology adoption theories. Students will actively coach or be coached during this course.

EDCI 567  Units: 1.5  Interactive and Multimedia Learning Theories  An in-depth analysis of theories and applications of multimedia learning in interactive learning environments. Students will explore the latest research, compare, and critique current practices and emerging technologies such as touch input devices, for creating rich educational experiences.

EDCI 568  Units: 1.5  Discourse on Social Media for Connected and Personalized Learning  Exploration of current research on communities of learning to situate discussion on connected practices for both personalized and professional learning. Critical discourse will focus on the balance of opportunities afforded by connected learning as well as issues such as cyber bullying, safety, and privacy in online environments.

EDCI 569  Units: 1.5  The Distributed, Blended and Open Classroom  An examination of current research and models of distributed learning and the theories that drive successful learning experiences in a variety of configurations such as online, blended, multi-access, and open learning.

EDCI 570  Units: 1.5  Research in Curriculum and Instruction in the Elementary Grades  Review of the critical issues, analysis of significant research on curriculum development at the elementary school level.  
**Note:** Credit will be granted for only one of EDCI 570, EDCI 570A, EDCI 570B, EDCI 570C, EDCI 570D, ED-E 540.

EDCI 571  Units: 1.5  Research in Curriculum and Instruction in the Secondary Grades  Review of the critical issues, analysis of significant research on curriculum development at the secondary level.  
**Note:** Credit will be granted for only one of EDCI 571, EDCI 571A, EDCI 571B, EDCI 571C, EDCI 571D, EDCI 571E, EDCI 571F, ED-E 541.

EDCI 572  Units: 1.5  Development and Implementation of the Curriculum  Application of relevant theories and models to the design and development of school curricula in a specified area.  
**Note:** Credit will be granted for only one of EDCI 572, EDCI 572A, EDCI 572B, EDCI 572C, EDCI 572D, EDCI 572E, EDCI 572F, ED-E 558.

EDCI 574  Units: 1.5  Environmental Education Perspectives  A multi-disciplinary approach to exploring goals for environmental and outdoor education; cultural differences in perceptions of community-environment relationships; the traditional ecological knowledge and wisdom of First Nations Peoples; current issues and trends; the research related to students’ environmental knowledge, attitudes and values; teaching strategies; and assessment techniques. Selected field trips.  
**Note:** Credit will be granted for only one of EDCI 574, ED-E 574.

EDCI 575  Units: 1.5  Global Education  Explores critical global issues through the strands of environment, development, peace and human rights. Pedagogical concerns vary with student interests and include values education, teaching controversial issues, and dealing with children’s despair about the future.  
**Note:** Credit will be granted for only one of EDCI 575, ED-E 546.

EDCI 576  Units: 1.5  Ecology, Pedagogy, and Practice  Theoretical examination of discourses that may include: the Deep Ecology Movement, Systems Theory, Eco-justice, and Cognitive Science to identify and discuss key issues in a variety of disciplinary areas as these relate to pedagogy and practice.  
**Note:** Credit will be granted for only one of EDCI 576, EDCI 591.

EDCI 580  Units: 1.5  Qualitative Research Methods  Provides a survey of a variety of qualitative methods, and opportunities for learners to develop competencies in research practices common to qualitative inquiry.  
**Note:** Credit will be granted for only one of EDCI 580, ED-B 580.
EDCI 581  Units: 1.5  
Research Methodologies in Education  
An opportunity for students to become familiar with various approaches to research, especially those relevant to their inquiries with special emphasis on the intellectual, social, and cultural contexts and ethics of research.

EDCI 582  Units: 1.5  
Writing as Research  
Writing as a mode of inquiry, with particular emphasis on the practice of writing. Includes all forms of interpretive inquiry, especially narrative, phenomenological, hermeneutic, and autobiographical inquiry.  
Note: Credit will be granted for only one of EDCI 582, ED-B 582.

EDCI 584  Units: 1.5  
Analysis of Quantitative and Mixed Methods Research  
An introduction to the understanding, critical analysis, and evaluation of the theoretical and practical issues related to published quantitative or mixed methods research in the field of education.

EDCI 590  Units: 1.5  
Directed Study - Curriculum and Instruction  
Notes:  
• May be taken more than once for credit in different topics.  
• Pro Forma required.  
Prerequisite(s): Permission of the faculty.

EDCI 591  Units: 1.5 or 3.0  
Selected Topics in Curriculum and Instruction  
A variable content course. Normally restricted to course offerings and not individual study.  
Note: May be taken more than once for credit in different topics.

EDCI 597  Units: 1.5  
Comprehensive Examination  
A written and/or oral comprehensive examination, which must be passed as required for individual Master of Education programs.  
Note: Credit will be granted for only one of EDCI 597, ED-B 597, ED-E 597.  
Grading: INP, COM, N, F.

EDCI 598  Units: 1.5 or 3.0  
Project - Curriculum and Instruction  
Grading: INP, COM, N, F.

EDCI 598A  Units: 1.5  
Project Proposal and Literature Review  
Encourages discussion of alternate approaches to project topics as well as examine the components of a project proposal, especially the features of an effective literature review. The proposal and literature review for the MEd project must be accepted by the 598A course instructor and the student's program supervisor.  
Note: Students who do not complete the course requirements may register a second time for the course. Incomplete course requirements in the second term will result in withdrawal from the program. There are appeal procedures for extinguating circumstances.  
Prerequisite(s): Admission to a Community-based MEd program.  
Grading: COM, INP, N, F.

EDCI 599  Units: 7.5  
Thesis - Curriculum and Instruction  
Grading: INP, COM, N, F.

EDCI 601  Units: 1.5  
Interdisciplinary Doctoral Seminar  
The purpose of Doctoral Seminar is to create a community of scholars in which faculty and graduate students share and support each other’s current research projects.  
Note: May be taken more than once for credit in different topics to a maximum of 6 units.  
Prerequisite(s): Admission to a doctoral program.

EDCI 614  Units: 1.5  
Discourses in Educational Studies  
Formerly: EDCI 600  
An opportunity for engagement in the research community, advancing the development of student’s own capacity for research, and a critical examination of contemporary literature on functional educational concepts, research issues and implications for curriculum and instruction.  
Note: Credit will be granted for only one of EDCI 1614, EDCI 600.

EDCI 632  Units: 1.5  
Emerging Trends in Curriculum Studies  
An examination and theoretical critique of emerging trends and topics in the field of curriculum studies as they appear in recent publications, presentations, and conference proceedings.  
Note: Credit will be granted for only one of EDCI 632, EDCI 532.

EDCI 633  Units: 1.5  
Discourses in Curriculum Design and Change  
Identification, analysis and critique of current discourses of curriculum development, implementation, and change found in educational practice and in theoretical literature.  
Note: Credit will be granted for only one of EDCI 633, EDCI 533.

EDCI 673  Units: 1.5  
ICT in Environmental, Mathematics, Science Instruction  
Explores the changes in information and communication technologies (ICT) have made on learning and instruction in environmental, mathematics and science education. Theoretical, classroom instruction, and research implications will be considered.

EDCI 681  Units: 1.5  
Advanced Research Design  
Explores research methodologies appropriate to specific research problems, questions, and contexts. An examination of the purposes of research, the role of literature review, educational theories, and design of a research question considering the relationship between question and research method.  
Note: Students who have completed a master’s level research methods course may request permission to register in the course.  
Prerequisite(s): Permission of the faculty.

EDCI 690  Units: 1.5 or 3.0  
Directed Studies - Curriculum and Instruction  
Under the direction of program supervisors, topics in the area of research interests of doctoral students will be examined, leading to the development of background material for a PhD dissertation.  
Notes:  
• May be taken more than once for credit in different topics.  
• Pro Forma required.  
Prerequisite(s): Set by department depending upon topic.

EDCI 691  Units: 1.5 or 3.0  
Selected Topics in Curriculum and Instruction  
Issues pertaining to students’ research interests and faculty expertise will be examined.  
Notes:  
• May be taken more than once for credit in different topics.  
• Pro Forma required.  
Prerequisite(s): Set by department depending upon topic.

EDCI 693  Units: 3.0  
Candidacy Examination - Curriculum and Instruction  
Candidacy Examinations which must be passed as required for individual Doctor of Philosophy Programs within the Faculty of Education. Exams will be reviewed and graded by all members of the individual’s Doctoral Committee.  
Grading: INP, COM, N, F.

EDCI 699  Units: 30.0  
PhD Dissertation - Curriculum and Instruction  
Prerequisite(s): EDCI 693  
Grading: INP, COM, N, F.
ENGL 500 - EOS 503

ENGL

English
Department of English
Faculty of Humanities

ENGL 500  Units: 1.5
Textual Studies and Methods of Research
Advanced training in research skills, textual studies, disciplinary issues, and professional life. Covers bibliography (analytical, descriptive, and enumerative), methods of research, appropriate forms of citation and documentation, and the dissemination of research.
Note: Compulsory for all graduate students, except those who can show equivalent previous credit.

ENGL 502  Units: 1.5
Teaching Literature and Composition
A preparation for teaching English literature and composition at universities and colleges. Includes: 1) a seminar and 2) a practicum in which students acquire practical experience in classrooms both at the University of Victoria and Camosun College. Covers a range of theoretical issues relating to teaching and learning as cultural activities such as: class, race and gender in the classroom; the politics, power dynamics and ethics of pedagogy; the influence of theory on pedagogical practice.
Note: Evaluated on a pass/fail basis. Seminar and practicum time are given equal weight; however, their proportion may vary from week to week and from term to term.
Grading: INP, COM, N, F.

ENGL 503  Units: 1.5
Special Studies I

ENGL 505  Units: 1.5
Studies in Literary Theory: Area Course

ENGL 506  Units: 1.5
Studies in Literary Theory: Special Topic

ENGL 507  Units: 1.5
Digital Literary Studies: History and Principles
Surveys and explores intellectual traditions and emergent concerns associated with computing in literary studies. Topics may include material relating to literary digital representation, analysis, communication, and creation, and involve theoretical considerations and pragmatic approaches.
Note: Credit will be granted for only one of ENGL 507, ENGL 590 (if taken in the same topic).

ENGL 508  Units: 1.5
Digital Literary Studies: Special Topic

ENGL 510  Units: 1.5
Studies in Old English Literature: Special Topic

ENGL 515  Units: 1.5
Studies in Middle English Literature: Area Course

ENGL 516  Units: 1.5
Studies in Middle English Literature: Special Topic

ENGL 520  Units: 1.5
Studies in Renaissance Literature: Area Course

ENGL 521  Units: 1.5
Studies in Renaissance Literature: Special Topic

ENGL 530  Units: 1.5
Studies in the Literature of the 17th Century: Area Course

ENGL 531  Units: 1.5
Studies in the Literature of the 17th Century: Special Topic

ENGL 540  Units: 1.5
Studies in the Literature of the 18th Century: Area Course

ENGL 541  Units: 1.5
Studies in the Literature of the 18th Century: Special Topic

ENGL 550  Units: 1.5
Studies in the Literature of the 19th Century: Area Course

ENGL 551  Units: 1.5
Studies in the Literature of the 19th Century: Special Topic

ENGL 560  Units: 1.5
Studies in 20th-Century British and Irish Literature: Area Course

ENGL 561  Units: 1.5
Studies in 20th-Century British and Irish Literature: Special Topic

ENGL 570  Units: 1.5
Studies in American Literature Pre-1914: Area Course

ENGL 571  Units: 1.5
Studies in American Literature 1914 to the Present: Area Course

ENGL 572  Units: 1.5
Studies in American Literature: Special Topic

ENGL 580  Units: 1.5
Studies in Commonwealth and Postcolonial Literatures: Area Course

ENGL 581  Units: 1.5
Studies in Commonwealth and Postcolonial Literatures: Special Topic

ENGL 582  Units: 1.5
Core Seminar in Literatures of the West Coast
An introduction to interdisciplinary study in the literatures of the West Coast. Primary areas of investigation include: Borders and Regions; Histories; Diasporas; Migrations, and Nations; Identity and Place. Compulsory for students in the Literatures of the West Coast Concentration.

ENGL 583  Units: 1.5
Studies in the Literature of the West Coast

ENGL 585  Units: 1.5
Studies in Canadian Literature: Area Course

ENGL 586  Units: 1.5
Studies in Canadian Literature: Special Topic

ENGL 590  Units: 1.5
Directed Reading

ENGL 598  Units: 3.0-4.5
Master's Essay or Project
Students are required to complete a Master's Essay or Project and a final oral examination based on that essay or project. It should not exceed 10,000 words (or the equivalent in digital, editorial, or bibliographical components), plus notes and bibliography. This essay or project will normally be a revised and extended version of a paper or project prepared for one of the student's courses.
Note: Students entering the program effective September 2009, and students doing a concentration in Literatures of the West Coast, will complete a Master's Essay or Project (not to exceed 10,000 words) worth 4.5 units. All other students who entered the program prior to September 2009 will complete a Master's Essay (not to exceed 6,500 words) worth 3 units.
Grading: INP, COM, N, F.

ENGL 693  Units: 3.0
Formerly: ENGL 698
Candidacy Examination
Notes:
- Credit will be granted for only one of ENGL 693, ENGL 698.
Grading: INP, COM, N, F.

ENGL 699  Units: 21.0-33.0
PhD Dissertation
Prerequisite(s): ENGL 693.
Grading: INP, COM, N, F.

EOS

Earth and Ocean Sciences
School of Earth and Ocean Sciences
Faculty of Science

EOS 503  Units: 1.5
Global Biogeochemical Cycles
Tracks the fate of organic matter from its formation (primary production) through its transformation and destruction during transport, depositional, and diagenetic remineralization processes. Global carbon, nitrogen, phosphorus, and sulphur cycles are discussed. Emphasis is placed on describing the fluxes of nutrients and other major compounds within soils, and the sedimentary and water columns, and across their interface.
EOS 504  Units: 1.5 or 3.0
Selected Topics in Geochemistry
Topics are selected from the fields of solid earth, organic, marine, atmospheric and planetary geochemistry and biogeochemistry. Examples include geological tracing in oceanography and climate, ocean biogeochemical processes, environmental geochemistry, trace element and isotope geochemistry, hydrosphere-lithosphere interactions and high-temperature geochemistry.
Note: May be taken more than once for credit in different topics.

EOS 508  Units: 1.5
Marine Geology
A seminar course covering modern processes of marine geology, including depositional processes and diagenesis of marine sediments. Examines a range of depositional environments: fjord and coastal, shelf, slope, and oceanic, with consideration of the data obtained from DSDDP and ODP drilling.

EOS 510  Units: 1.5
Plate Tectonics: the Geological Record
An examination of the processes of plate tectonics as revealed by the geological record, including Precambrian evolution of cratons; rifts and passive margins; convergent margins and orogens; plate motions through time.

EOS 513  Units: 1.5
Advanced Igneous and Metamorphic Petrology
A seminar style course focusing on advanced topics in igneous and metamorphic petrology and how the tools of petrology can be used for geodynamic reconstructions.

EOS 516  Units: 1.5
Formerly: EOS 516A
Ocean Acoustics
An introduction to the ocean as an acoustic medium, sound sources in the ocean, sound propagation in deep and shallow water, reflection and transmission processes at ocean boundaries, and ambient noise. Particular focuses can include acoustic signal processing, numerical propagation modelling, source localization, and ocean acoustic inversion.
Note: Credit will be granted for only one of EOS 516, EOS 516A.

EOS 518  Units: 1.5 or 3.0
Selected Topics in Earth, Ocean and Atmospheric Sciences
Examines selected research topic(s) from the fields of geology, oceanography, and/or atmospheric science.
Note: May be taken more than once for credit in different topics.

EOS 519  Units: 1.5
Selected Topics in Geophysics
Examples of topics include geodynamics or continuum mechanics with geological applications, time series analysis with geophysical applications, seismic data processing, well log analysis, environmental and engineering geophysics, and geophysics of the continental crust.
Note: May be taken more than once for credit in different topics.

EOS 523  Units: 1.5
Seismology
Theoretical and practical aspects of seismic wave propagation, earthquake seismology, and processing and interpretation of reflection and refraction data.

EOS 525  Units: 1.5
Research Frontiers in Earth and Ocean Science
This interdisciplinary Earth and Ocean Sciences course examines, in detail, global topics that are current, significant and which require input and integration across diverse disciplines. The specific topics change annually and the subject is team-taught by several SEOS/UVic faculty members.

EOS 526  Units: 1.5
Geophysical Inverse Theory
Inverse theory and its applications in Earth and Ocean Sciences. Topics include non-uniqueness, general linear least-squares, singular-value decomposition, regularization, linearization, global inversion, Bayesian inversion, and Markov-chain Monte Carlo methods. Applications will be drawn from the research literature and include topics such as inversion of seismic, acoustic and electromagnetic data, tomography and matched-field inversion.

EOS 531  Units: 1.5
Physical Oceanography
Physical properties of sea water, equation of state, gravitational stability, large-scale ocean currents, meridional distribution of salinity and temperature, surface heat budgets, water masses, estuary flows.

EOS 538  Units: 1.5
Aqueous Geochemistry and the Environment
Major aspects of the global water cycle, sources, sinks of chemical elements present in aquatic systems, weathering reactions, solution geochemistry of oxic and anoxic environments in natural aquatic systems (rainwaters, ground waters, rivers, lakes, estuaries and oceans). Other topics include the application of natural and anthropogenic tracers to geochemical problems with aquatic systems.
Note: Credit will be granted for only one of EOS 538, EOS 423.

EOS 550  Units: 1.5
The Climate System
Studies of the Earth’s climate require an understanding of the intimate links between the hydrosphere, atmosphere, cryosphere and biosphere. Basic theories of the dynamics of ocean and atmosphere. The physics and biogeochemistry of coupled models are examined with emphasis on simple intuition-building mathematical models as well as discussion of large computer models.

EOS 562  Units: 1.5
Mathematical Tools for Earth, Ocean and Atmospheric Sciences
Selected topics to provide training in mathematical techniques and tools used in ocean and earth systems data analysis and numerical modeling. Examples of topics are time-series analysis, statistical prediction and analysis, and numerical finite-difference, finite-element and spectral modeling techniques.
Notes:
• May be taken more than once for credit in different topics.
• May repeated with different content (offered as S62A, S62B, S62C, S62D).

EOS 580  Units: 1.0-3.0
Directed Studies
Designed to enable students to pursue individual interests.
Note: May be taken more than once for credit in different topics.

EOS 599  Units: to be determined*
MSc Thesis
The thesis or dissertation requirement for advanced degrees applies to all students in the School. Students must enrol in 599 in their first term and remain enrolled until their thesis requirements have been completed.
* Normally 9 units.
Grading: INP, COM, N, F.

EOS 693  Units: 3.0
PhD Candidacy Examination
Students must enrol in EOS 693 in their first term and remain enrolled until their candidacy requirements have been completed, normally within the first two years of a PhD program. A pre-candidacy committee meeting must precede the formal candidacy exam.
Corequisite(s): EOS 699.
Grading: INP, COM, N, F.

EOS 699  Units: to be determined
PhD Dissertation
The thesis or dissertation requirement for advanced degrees applies to all students in the School. Students must enrol in 699 in their first term and remain enrolled until their dissertation requirements have been completed.
Corequisite(s): EOS 693.
Grading: INP, COM, N, F.

EPHE
Exercise Science, Physical and Health Education
School of Exercise Science, Physical and Health Education
Faculty of Education

EPHE 500  Units: 0
Research Seminar
An examination of contemporary research, theoretical, and practical issues in Exercise Science Physical and Health Education.
Grading: INP, COM, N, F.
EPHE 561  
**Units: 1.5**  
**Current Issues in Leisure Services**  
Addresses the problems, challenges and opportunities facing the recreation-leisure service professional. Focus on concepts, theories and historical framework of leisure; nature and scope of the profession.  
**Note:** Credit will be granted for only one of EPHE 561, PE 561.

EPHE 562  
**Units: 1.5**  
**Administrative Planning Process**  
Examination of the planning process as it exists within federal, provincial, regional and municipal government recreation departments as well as not-for-profit and private sector leisure delivery organizations. Role of the recreation manager/administrator as leader, team member and facilitator.  
**Note:** Credit will be granted for only one of EPHE 562, PE 562.

EPHE 563  
**Units: 1.5**  
**Community Leisure Service Development**  
Exploration of the nature and function of leisure service development as a community-based function. Focus on the development and use of other social service organizational models.  
**Note:** Credit will be granted for only one of EPHE 563, PE 563.

EPHE 570  
**Units: 1.5**  
**Skill Acquisition in Physical Education and Sport**  
A review of learning theories and principles as they pertain to the acquisition and retention of motor skills; the neural mechanisms involved in the learning and control of motor patterns; information processing in human performance; detailed study of research on memory, attention, retrieval systems, and movement control.  
**Note:** Credit will be granted for only one of EPHE 570, PE 570.

EPHE 572  
**Units: 1.5**  
**Physiology in Physical Education and Sport**  
The study of physiological basis for sport performance and fitness. The assessment of physiological status and the rationale for the prescription of exercise programs.  
**Note:** Credit will be granted for only one of EPHE 572, PE 572.

EPHE 573  
**Units: 3.0**  
**Research Methods**  
An overview of the qualitative and quantitative research approaches specific to the various disciplinary areas in the School of Exercise Science, Physical and Health Education. Underlying assumptions of both qualitative and quantitative research are discussed and the respective research processes are reviewed. Other topics include: the role of the researcher, selecting and developing a research problem; reviewing the literature; developing research hypotheses; issues in measurement, data collection issues, writing research proposals; research ethics; and communicating the results of research.  
**Note:** Credit will be granted for only one of EPHE 573, PE 573.

EPHE 574  
**Units: 1.5**  
**Administration of Physical Education, Recreation and Sport**  
After presenting a theoretical base for administrative and organizational theories, a link will be made to specific situations in the fields of physical education, recreation and sport.  
**Note:** Credit will be granted for only one of EPHE 574, PE 574.

EPHE 575  
**Units: 1.5**  
**Applied Sport Psychology**  
Provides students with a further understanding of concepts and principles underlying the field of sport psychology. Provides a basis for the use of mental training techniques such as imagery, self-talk, feedback, and focusing to improve sport performance and experiences.  
**Note:** Credit will be granted for only one of EPHE 575, PE 575.

EPHE 576  
**Units: 1.5**  
**Teaching and Coaching Effectiveness in Physical Education and Sport**  
A review of current models of effective teaching and coaching, observation and coaching systems; analysis of teaching and coaching behaviours; a review of current research.  
**Note:** Credit will be granted for only one of EPHE 576, PE 576.

EPHE 577  
**Units: 1.5**  
**Research Methods and Techniques in Coaching Studies**  
The development of research skills required to interpret the literature related to coaching and sport performance and develop a project proposal as part of the requirements for the degree.  
**Notes:**  
- Credit will be granted for only one of EPHE 577, PE 577, PE 577A.  
- Taught in summer only.  
**Prerequisite(s):** Admission to MEd program in Coaching Studies.

EPHE 578  
**Units: 1.5**  
**Biomechanics**  
**Note:** Not open to students with credit in PE 578.

EPHE 579  
**Units: 1.5**  
**Current Issues in Coaching Studies**  
Identification and selection of issues in coaching and sport for presentation, discussion and resolution. As leaders in sport, students will consider issues from both a content perspective and in the context of beliefs and values.  
**Note:** Credit will be granted for only one of EPHE 579, PE 577B, PE 579.

EPHE 580  
**Units: 1.5**  
**Physiological Issues in Physical Activity and Health**  
Selected issues and research examining the physiological responses and adaptations to exercise, especially as they relate to performance and/or health.  
**Note:** Credit will be granted for only one of EPHE 580, PE 580.

EPHE 581  
**Units: 1.5**  
**Psychological Issues in Physical Activity and Health**  
Examines selected current psychological issues affecting individual and group involvement in the different forms of physical activity and how these interact with performance and health from childhood to the senior years. Research in the field will be examined to assist the understanding of current beliefs and practices.  
**Note:** Credit will be granted for only one of EPHE 581, PE 581.

EPHE 582  
**Units: 1.5**  
**Neuroscience in Physical Activity and Health**  
A seminar on issues and research in neuroscience related to motor control across the lifespan and in typical and atypical populations.

EPHE 583  
**Units: 1.5**  
**Issues in Health Promotion and Wellness**  
Issues, research and values in health promotion and wellness related to physical activity. Topics may include community-based research in education, health, recreation and allied social service settings; social determinants of health and physical activity; and theory and practice of programs and policies affecting health, wellness and physical activity.  
**Note:** Credit will be granted for only one of EPHE 583, PE 583.

EPHE 584  
**Units: 1.5**  
**Pedagogical Issues in Physical Activity and Health**  
Current pedagogical research that influences national and provincial physical activity policies, school-based physical education programs and community-based physical activity programs.  
**Note:** Credit will be granted for only one of EPHE 584, PE 584.

EPHE 585  
**Units: 1.5**  
**Qualitative Research Genres Applied to Education, Health and Science**  
Examines issues surrounding the development of research representations that inform issues in education, health and society. A core component of the course will be to develop, gather data and report on a community-based inquiry project. Qualitative genres based on different modes of inquiry will be explored and applied in a student developed inquiry project.  
**Note:** Credit will be granted for only one of EPHE 585, PE 585.

EPHE 590  
**Units: 1.5 or 3.0**  
**Directed Study**  
**Notes:**  
- May be taken more than once for credit in different topics.  
- Pro Forma required.  
**Prerequisite(s):** Permission of the school.
EPHE 590  Units: 1.5 or 3.0  
Directed Studies  
Research topics will be pursued at the doctoral level under the direction of one or more faculty members.  
Notes:  
• May be taken more than once for credit in different topics.  
• Pro Forma required.

EPHE 699  Units: 18.0  
PhD Dissertation - Kinesiology  
Prerequisite(s): EPHE 693.  
Grading: INP, COM, N, F.
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<td>FORB 515</td>
<td>1.5</td>
<td>Mycology</td>
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<td>FORB 527</td>
<td>1.5</td>
<td>Advanced Plant Biochemistry and Biochemical Ecology</td>
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<td>FORB 538</td>
<td>1.5</td>
<td>Nutrient Cycling and Prokaryotes</td>
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<tr>
<td>FORB 549</td>
<td>1.5</td>
<td>Individual Study in Forest Biology</td>
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<tr>
<td>FORB 560</td>
<td>1.5</td>
<td>Forest Biology Seminar</td>
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<tr>
<td>FORB 570</td>
<td>1.5</td>
<td>Advanced Topics in Forest Biology</td>
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<tr>
<td>FRAN 500A</td>
<td>1.5</td>
<td>Introduction to Research Methods</td>
</tr>
<tr>
<td>FRAN 500B</td>
<td>1.5</td>
<td>Application of Research Methods</td>
</tr>
<tr>
<td>FRAN 502</td>
<td>1.5</td>
<td>Applied Linguistics in French</td>
</tr>
<tr>
<td>FRAN 503</td>
<td>1.5</td>
<td>Studies in French Linguistics</td>
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<tr>
<td>FRAN 504</td>
<td>1.5</td>
<td>Studies in Culture and Society</td>
</tr>
</tbody>
</table>
FRAN 505  Units: 1.5  
Formerly: FREN 505  
Studies in Literary Theory and Criticism  
Notes:  
• Credit will be granted for only one of FRAN 505, FREN 505 (if taken in the same topic).  
• May be taken more than once for credit in different topics.  
• Variable content course.

FRAN 506  Units: 1.5  
Studies in French Literature and Culture  
Notes:  
• May be taken more than once for credit in different topics.  
• Variable content course.

FRAN 515  Units: 1.5  
Formerly: FREN 515  
Studies in Québec or French-Canadian Literatures  
Notes:  
• Credit will be granted for only one of FRAN 515, FREN 515 (if taken in the same topic).  
• May be taken more than once for credit in different topics.  
• Variable content course.

FRAN 517  Units: 1.5  
Formerly: FREN 517  
Studies in Francophone African or Caribbean Literatures  
Notes:  
• Credit will be granted for only one of FRAN 517, FRAN 518, FREN 517, FREN 518 (if taken in the same topic).  
• May be taken more than once for credit in different topics.  
• Variable content course.

FRAN 524  Units: 1.5  
Formerly: FREN 524  
Studies in Transmediation  
Notes:  
• Credit will be granted for only one of FRAN 524, FREN 524 (if taken in the same topic).  
• May be taken more than once for credit in different topics.  
• Variable content course.

FRAN 525  Units: 1.5  
Formerly: FREN 525  
Studies in Translation  
Notes:  
• Credit will be granted for only one of FRAN 525, FREN 525 (if taken in the same topic).  
• May be taken more than once for credit in different topics.  
• Variable content course.

FRAN 590  Units: 1.5 or 3.0  
Formerly: FREN 590  
Directed Studies  
A course designed to enable students to pursue individual interests.  
Notes:  
• Credit will be granted for only one of FRAN 590, FREN 590 (if taken in the same topic).  
• May be taken more than once for credit in different topics.  
• Pro Forma required.

FRAN 598  Units: 4.5  
Formerly: FREN 598  
Reading List/Oral  
A reading list compiled in consultation with advisers, a short critical paper, and an oral exam.  
Note: Credit will be granted for only one of FRAN 598, FREN 598.  
Grading: INP, COM, N, F.

FRAN 599  Units: 7.5  
Formerly: FREN 599  
Thesis/Oral  
Thesis (topic to be selected in consultation with Graduate Committee as the development of coursework) and oral examination.  
Notes:  
• Credit will be granted for only one of FRAN 599, FREN 599.  
• Thesis option is by invitation of the Graduate Committee only.  
Grading: INP, COM, N, F.

GEOG Geography  
Department of Geography  
Faculty of Social Sciences  

GEOG 500A  Units: 1.5  
Formerly: part of GEOG 500  
Geographical Research Approaches  
Examines the diverse approaches to geographical research. Students will participate in weekly seminar discussions and develop a context paper that reviews the geographical literature in their research area. Students are also expected to attend the departmental lecture series as part of their course participation.  
Notes:  
• Credit will be granted for only one of GEOG 500A, GEOG 500.  
• Required core course for all students.

GEOG 500B  Units: 1.5  
Formerly: part of GEOG 500  
Research Design in Geography  
Examines key strategies of research design and professional development in Geography. Students will participate in weekly seminar discussions and develop a master's research proposal or doctoral scoping document that advances their primary research concentration. Students are also expected to attend the departmental lecture series as part of their course participation.  
Notes:  
• Credit will be granted for only one of GEOG 500B, GEOG 500.  
• Required core course for all students.

GEOG 505 - GEOG 537  
293  

GEOG 518  Units: 1.5  
Advanced Spatial Analysis and Spatial Statistics  
An opportunity to gain theoretical and applied experience in spatial statistics and advanced geographical analysis. Topics include: point pattern analysis, areal data analysis and spatial autocorrelation, and geostatistics (i.e., variograms and kriging). Labs and a final project are designed to provide students with hands on experience applying theory to a range of data sets and to a data set selected by the student.  
Notes:  
• Students who have equivalent GIS experience may request permission to register in the course.  
• Master's Program students are required to take one of GEOG 518, GEOG 523, GEOG 524.  
Prerequisite(s):  
• GEOG 528 and GEOG 529; or  
• permission of the department.

GEOG 520  Units: 1.5  
Introductory GIS for Graduate Research  
Provides Geographic Information Systems (GIS) training for graduate students using GIS as a research tool. Topics include: GIS data types and representation, map projections, importing and exporting spatial data, data integration, attribute and spatial queries. Students completing this course will acquire the skills needed to conduct their own research using GIS.

GEOG 523  Units: 1.5  
Qualitative Methods in Human Geography  
This course will explore a range of theoretical and methodological approaches in qualitative analysis as it applies to human geography. Students expect to gain expertise in understanding epistemological orientations of objectivism, constructionism and interpretivism. Identification of a range of traditional and innovative methodologies that students may consider for research projects such as: ethnography, phenomenology, discourse analysis, etc. Common interview strategies and data collection and analysis methods and approaches will be explored.  
Note: Masters students are required to take one of GEOG 518, GEOG 523, GEOG 524 or another ‘methods’ based course on recommendation of the supervisory committee as approved by the Graduate Adviser.

GEOG 524  Units: 1.5  
Advanced Quantitative Methods  
Examines the use and interpretation of selected multivariate statistics.  
Note: Master's Program students are required to take one of GEOG 518, GEOG 523, GEOG 524.  
Prerequisite(s): 1.5 units of 200-level STAT course.

GEOG 536  Units: 1.5  
Advanced Seminar in Human Geography  
An advanced overview of theoretical approaches and major research paradigms in contemporary human geography.

GEOG 537  Units: 1.5  
Advanced Seminar in Physical Geography  
Selected research topics in biogeography, climatology, hydrology, geomorphology and soil science. Course content will vary annually, depending on graduate and faculty research interests. Seminars, faculty and guest lecturers and individual research projects will be utilized.  
Note: Credit will be granted for only one of GEOG 537, GEOG 525.
GEOG 538 — Units: 1.5
Advanced Seminar in Geomatics
Identifies and reviews knowledge and influential thought that have shaped and advanced the science of geomatics and associated technology through time. Students are introduced to the contemporary knowledge in geomatics, areas of application, unresolved questions and the present and future research agenda. Includes presentations by guest lecturers, readings and literature reviews.

GEOG 539 — Units: 1.5
Advanced Seminar in Resource Management
A seminar dealing with resources management areas currently (or recently) being researched by members of the department. Topics will include: problem formulation, conceptual/literature background, fieldwork/data issues, analytical approaches and results/interpretation.
Note: Credit will be granted for only one of GEOG 539, GEOG 552.

GEOG 546 — Units: 1.5
Advanced Topics in Human Geography
A special topics seminar in human and social geography. Topics vary by instructor.
Notes:
• May be taken more than once for credit in different topics.
• Not offered on a regular basis.

GEOG 547 — Units: 1.5
Advanced Topics in Physical Geography
An examination of contemporary theoretical and/or applied research subjects in physical geography.
Notes:
• May be taken more than once for credit in different topics.
• Not offered on a regular basis.

GEOG 548 — Units: 1.5
Advanced Topics in Geomatics
An examination of contemporary theoretical and/or applied research subjects in geomatics.
Notes:
• May be taken more than once for credit in different topics.
• Not offered on a regular basis.

GEOG 549 — Units: 1.5
Advanced Topics in Resource Management
A seminar dealing with conceptual and research design issues involved with a project or problem area in resource management of interest to a faculty member.
Notes:
• May be taken more than once for credit in different topics.
• Not offered on a regular basis.

GEOG 590 — Units: 1.5
Directed Studies in Geography
Note: MA, MSc and PhD students may only take one GEOG 590 course as part of their minimum program requirements. If they wish to take additional GEOG 590 courses these can be added to their minimum course load. Individual titles will be assigned to each numbered section of the course arranged by supervisory committees.

GEOG 591 — Units: 1.5
Advanced Topics in Geography
Various advanced special topics courses spanning the discipline of Geography.
Note: Master’s and Doctoral students may take only one GEOG 591 toward their minimum course requirements but may take additional courses in different topics beyond their minimum load on the advice of their supervisory committee.

GEOG 599 — Units: to be determined
MA, MSc Thesis
Grading: INP, COM, N, F.

GEOG 693 — Units: 3.0
Candidacy Examination
By eighteen months of registration as a provisional doctoral student, a student must register for and eventually pass a candidacy examination.
The candidacy exam format includes two take-home essays (30 pages each) and an oral exam (2 hours). Essay 1 will focus on the development of thought in the candidate’s area of Geography (e.g., Physical, Human, Geomatics, or Resources) with an emphasis on linkages to the broader discipline. Essay 2 will focus on the candidate’s research area. An oral examination will follow within 2 to 3 weeks after the completion of Essay 2.
Grading: INP, COM, N, F.

GEOG 699 — Units: to be determined
PhD Dissertation
Prerequisite(s): GEOG 693.
Grading: INP, COM, N, F.

GMST 503 — Units: 1.5
Teaching in the Disciplines of Germanic and Slavic Studies
A practice-based introduction to course design, teaching strategies, methodologies and assessment tools in the teaching areas of Germanic and Slavic Studies.
Note: Credit will be granted for only one of GMST 503, SLST 503.

GMST 505 — Units: 1.5
Advanced German Language Study
Research topics may include German morphology, phonetics, lexicology and language acquisition.

GMST 509 — Units: 1.5
Also: SLST 509
Special Topics Field School
Exploration of cultural studies topics in European, German-speaking or Slavic countries. Promotes intercultural and experiential learning through joint workshops with European students and field research working at relevant cultural sites and with relevant artefacts. Topics vary.
Note: May be taken more than once for credit in different topics.

GMST 511 — Units: 1.5
Studies in Film
A critical analysis and study of films of the 20th and 21st century by German-speaking filmmakers.

GMST 520 — Units: 1.5
Formerly: GER 520
17th-Century Cultural Studies
Note: Credit will be granted for only one of GMST 520, GER 520.

GMST 521 — Units: 1.5
Studies in Germanic Literatures and Cultures
Examination of literary works and cultural processes in Austria, Germany and/or Switzerland.

GMST 530 — Units: 1.5
Formerly: GER 530
18th-Century Cultural Studies
Note: Credit will be granted for only one of GMST 530, GER 530.

GMST 531 — Units: 1.5
Studies in Germanic Cultural History
A cultural studies approach to texts, films, performances, media and material objects and spaces in German-speaking societies.

GMST 540 — Units: 1.5
Formerly: GER 540
Special Topics Field School
A special topics seminar in human and social geography. Topics vary by instructor.
Notes:
• May be taken more than once for credit in different topics.

GMST 550 — Units: 1.5
Also: SLST 550
Advanced Topics in Human Geography
A special topics seminar in human and social geography. Topics vary by instructor.
Notes:
• May be taken more than once for credit in different topics.
• Not offered on a regular basis.

GMST 551 — Units: 1.5
Studies in Film
A critical analysis and study of films of the 20th and 21st century by German-speaking filmmakers.

GMST 552 — Units: 1.5
Also: SLST 552
Advanced Topics in Physical Geography
An examination of contemporary theoretical and/or applied research subjects in physical geography.
Notes:
• May be taken more than once for credit in different topics.
• Not offered on a regular basis.

GMST 553 — Units: 1.5
Teaching in the Disciplines of Germanic and Slavic Studies
A practice-based introduction to course design, teaching strategies, methodologies and assessment tools in the teaching areas of Germanic and Slavic Studies.
Note: Credit will be granted for only one of GMST 503, SLST 503.

GMST 555 — Units: 1.5
Advanced German Language Study
Research topics may include German morphology, phonetics, lexicology and language acquisition.

GMST 559 — Units: 1.5
Also: SLST 559
Special Topics Field School
Exploration of cultural studies topics in European, German-speaking or Slavic countries. Promotes intercultural and experiential learning through joint workshops with European students and field research working at relevant cultural sites and with relevant artefacts. Topics vary.
Note: May be taken more than once for credit in different topics.

GMST 561 — Units: 1.5
Studies in Film
A critical analysis and study of films of the 20th and 21st century by German-speaking filmmakers.
GMST 551 Units: 1.5
Formerly: GER 551
20th-Century Cultural Studies II
Note: Credit will be granted for only one of GMST 551, GER 551.

GMST 561 Units: 1.5
Transnational Cultural Studies
Examines contemporary texts and visual productions by migrant and immigrant authors, filmmakers and performance artists in Germany, Austria and Switzerland. Topics may include minority literature and film, hybridity, diasporic and borderland writing.
Note: Credit will be granted for only one of GMST 561, GMST 550 (if taken in Sep-Dec 2013), GMST 560, ENGL 503 (if taken as section A05 in Jan-Apr 2010 or Sep-Dec 2013), GER 550 (if taken in Jan-Apr 2010).

GMST 565 Units: 1.5
Adorno, Benjamin and Frankfurt School Critical Theory
Explores Frankfurt School Critical Theory through the cultural context of Weimar modernism through the fascist period to Germany in the 1960s. Juxtaposes the theory with relevant examples from media, film, literature, avant-garde and popular music.
Note: Credit will be granted for only one of GMST 565, GMST 465.

GMST 570 Units: 1.5
Also: SLST 570
Studies in New Media in Second Language Acquisition
Critical examination of the current research on teaching a foreign language. Focus on learning and teaching outside of the language environment, foreign language learning theories, teaching methodologies and practices.
Note: Credit will be granted for only one of GMST 570, SLST 570.

GMST 580 Units: 1.5
Also: HSTR 450
The Holocaust
Examines the origins, progression, central characters and legacies of the Nazi genocide. Focuses on Jewish experiences of Nazi terror and investigates how Nazi racial policy targeted other social and ethnic groups. Considers the post-1945 representation of the Holocaust in film, museum exhibits and memorials.
Note: Credit will be granted for only one of GMST 580, HSTR 450, HIST 387, HIST 389 (if taken in the same topic).

GMST 581 Units: 1.5 Hours: 3-0-0
Holocaust Studies in Cross-Cultural Contexts
Note: May be taken more than once for credit in different topics with permission of the department to a maximum of 4.5 units.

GMST 582 Units: 1.5 Hours: 3-0-0
Special Topics in Holocaust Studies
Note: May be taken more than once for credit in different topics with permission of the department to a maximum of 4.5 units.

GMST 583 Units: 1.5
Teaching About the Holocaust
Introduces teaching approaches, methodologies and scholarly discourses in Holocaust Education. Analyzes a broad range of primary and secondary sources (oral testimonies, literature, film, mixed media art, photography and graphic novels), and discusses how they can be used in various educational settings both in Europe and North America.

GMST 584 Units: 1.5 Hours: 3-0-0
Also: GMST 484
Holocaust Testimony and Archival Practice
Working with actual testimony from the USC Shoah Foundation, explores theoretical and practical aspects of indexing and conceptualizing Holocaust narratives and testimony.
Note: Credit will be granted for only one of GMST 584, GMST 484.

GMST 585 Units: 1.5
Holocaust and Memory Studies
Explores issues of memory from the perspective of both gender and genre. Examination of issues of memory and post-memory, aspects of “truth” and positonality in memoirs, letters, diaries and documentaries, as well as the fascination with the Holocaust and WWII as a site of cultural memory.
Note: Credit will be granted for only one of GMST 585, ENGL 503 (if taken as section A04 in Sep-Dec 2010), GER 550 (if taken as section A01 in Sep-Dec 2010 or Sep-Dec 2012).

GMST 587 Units: 1.5
Practicum in Holocaust Studies
An individually designed creative project, internship, or archival research paper based on a hands-on approach to Holocaust Studies.
Grading: INP, COM, N, F.

GMST 589 Units: 1.5
I-witness Field School
Analysis of the ways in which the Holocaust is memorialized in Central Europe. One week of coursework at UVic, followed by three weeks in Central Europe. Promotes intercultural learning through a variety of activities including joint workshops with European students and visits to memorial sites, museums and monuments of the Holocaust.

GMST 590 Units: 1.5
Formerly: GER 590
Directed Studies I
Notes:
• Credit will be granted for only one of GMST 590, GER 590.
• Pro Forma required.

GMST 591 Units: 1.5 or 3.0
Formerly: GER 591
Directed Studies II
Notes:
• Credit will be granted for only one of GMST 591, GER 591.
• Pro Forma required.

GMST 598 Units: 4.5
Research Paper or Project
A major research paper under the guidance of a supervisor and committee member. Students can also opt to submit a visual arts project, a performance-based production, or a creative writing project.
Grading: INP, COM, N, F.

GMST 599 Units: 6.0-9.0
Thesis
Note: Credit will be granted for only one of GMST 599, GER 599.
Grading: INP, COM, N, F.

GRS
Greek and Roman Studies
Department of Greek and Roman Studies
Faculty of Humanities

GRS 500 Units: 1.5
Pro-seminar in Research Methods and Practices
Advanced research methods and issues including on-line research and other resources. Dissertation of research and preparation for publication, including communication skills, presentation of research results either orally or in print, critical analysis, and response to scholarly questions. Best procedures for writing and preparing applications for grants, fellowships and employment. Approaches to professional academic life including practices of the discipline.
Grading: INP, COM, N, F.

GRS 501 Units: 3.0
Greek Literature

GRS 502 Units: 3.0
Greek History

GRS 503 Units: 3.0
Latin Literature

GRS 504 Units: 3.0
Roman History

GRS 505 Units: 3.0
Ancient Art and Archaeology

GRS 506 Units: 3.0
Ancient Philosophy

GRS 590 Units: 1.5-3.0
Directed Individual Study
Notes:
• May be taken more than once for credit in different topics to a maximum of 4.5 units.
• Pro Forma required.

GRS 599 Units: 6.0-9.0
MA Thesis
Note: Before beginning the thesis the candidate must arrange with the supervisory committee and the Graduate Adviser the number of units to be assigned.
Grading: INP, COM, N, F.
GRS 601A - HINF 503

**GS 601A**  Units: 1.5  
Readings in Classical Literature (Greek)  
Grading: INP, COM, N, F.

**GS 601B**  Units: 1.5  
Readings in Classical Literature (Latin)  
Grading: INP, COM, N, F.

**GS 602A**  Units: 1.5  
Readings in Ancient History (Greek)  
Grading: INP, COM, N, F.

**GS 602B**  Units: 1.5  
Readings in Ancient History (Latin)  
Grading: INP, COM, N, F.

**GS 603**  Units: 1.5  
Reading in Classical Archaeology  
Grading: INP, COM, N, F.

**GS 605**  Units: 1.5  
Archaeological Methods & Theory  
Grading: INP, COM, N, F.

**GS 611**  Units: 3.0  
Seminar in Classical Literature  
Grading: INP, COM, N, F.

**GS 612**  Units: 3.0  
Seminar in Ancient History  
Grading: INP, COM, N, F.

**GS 613**  Units: 3.0  
Seminar in Classical Archaeology  
Grading: INP, COM, N, F.

**GS 621**  Units: 3.0  
Topical Field in Classical Literature  
An intensive study of a particular field (author, genre, time period) in Greek or Roman literature.  
Grading: INP, COM, N, F.

**GS 622**  Units: 3.0  
Topical Field in Ancient History  
An intensive study of a particular field (time period, historical event, historical figure, historical topic) in Greek or Roman history.  
Grading: INP, COM, N, F.

**GS 623**  Units: 3.0  
Topical Field in Classical Archaeology  
An intensive study of a particular field (time period, archaeological event, archaeological topic) in Greek or Roman archaeology.  
Grading: INP, COM, N, F.

**GS 693**  Units: 3.0  
Candidacy Exam  
Students enroll in 693 after completing their topical fields requirements (GRS 621, 622, or 623).  
Grading: INP, COM, N, F.

**GS 699**  Units: 18.0  
PhD Dissertation  
Grading: INP, COM, N, F.

**GS 500**  Units: 1.5 or 3.0  
Special Topics  
Notes:  
- May be taken more than once for credit in different topics.  
- Students must seek prior approval from their supervisory committee and graduate adviser for inclusion of this course in their graduate program, although they will be permitted to register in it as “extra” to their program.  
Proposals for these courses must include approval by the funding academic unit(s) before being submitted to the Dean of Graduate Studies for final approval. Proposal forms and detailed instructions are available through the Faculty of Graduate Studies.

**GS 501**  Units: 1.5 or 3.0  
Interdisciplinary Topics  
Courses may be offered between academic departments through the Faculty of Graduate Studies.  
Notes:  
- May be taken more than once for credit in different topics.  
- At least one of the offering departments must have a regular graduate program.  
- Students must seek prior approval from their supervisory committee and graduate adviser for inclusion of this course in their graduate program, although they will be permitted to register in it as “extra” to their program.  
Proposals for these courses must include approval by the funding academic unit(s) before being submitted to the Dean of Graduate Studies for final approval. Proposal forms and detailed instructions are available through the Faculty of Graduate Studies.

**GS 502**  Units: 1.5-3.0  
Approved Exchange  
University of Victoria students attending courses under approved exchange agreements are required to register in this course to maintain their UVic registration status.  
Prerequisite(s): Permission of the faculty.  
Grading: INP, COM, N, F.

**GS 503**  Units: 3.0  
Canadian Visiting Research  
For students in research activities under the supervision of University of Victoria faculty as part of a regular graduate degree program at their home university.  
Prerequisite(s): Permission of the faculty.  
Grading: INP, COM, N, F.

**GS 504**  Units: 3.0  
International Visiting Research  
For students in research activities under the supervision of University of Victoria faculty as part of a regular graduate degree program at their home university.  
Prerequisite(s): Permission of the faculty.  
Grading: INP, COM, N, F.

**HINF 501**  Units: 1.5  
Database Design  
Addresses the issues facing a database designer in the development of database applications appropriate for health data of various kinds. The content includes the elements of conceptual, implementation and physical database design to support health information systems.  
Note: Credit will be granted for only one of HINF 501, HINF 591 (if taken in the same topic).

**HINF 503**  Units: 1.5  
Research Methods in Health Informatics  
Examines a variety of study designs used in health informatics and outcomes research. These include experimental designs, observational and predictive studies, and qualitative inquiries. For each study design, appropriate analytical approaches and reporting guidelines will be covered.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>HINF 511</td>
<td>1.5</td>
<td>Clinical Decision Support and Information Systems</td>
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<td>Examines clinical information systems (CIS), and clinical decision support (CDS) tools that will help them make informed decisions within their organization and participate in strategic planning activities. Includes: description and evaluation of CIS and CDS, effectiveness of CIS and CDS interventions, policies affecting CIS and CDS deployments, and health information standards pertinent to CIS initiatives.</td>
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<tr>
<td>HINF 516</td>
<td>1.5</td>
<td>Telehealth, m-Health and Pervasive Health Technology</td>
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<td>Reviews historical context of telehealth, m-health and pervasive health technologies and current use. Explores current applications and innovations in telehealth, m-health and pervasive health technologies with an emphasis on program evaluation.</td>
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<tr>
<td>HINF 520</td>
<td>1.5</td>
<td>Public Health Informatics</td>
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<td>Provides a discussion of new trends and applications in public health informatics. Topics include: data requirements, public health surveillance systems and regional and national health information reporting systems. Linking public health information through electronic health records will be considered. Design of information systems used by consumers and Internet-based public health information systems will be discussed. Future directions and the roles of health professionals and health informaticians in public health informatics will be presented.</td>
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<tr>
<td>HINF 530</td>
<td>1.5</td>
<td>Evidence-Based Health Informatics</td>
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<td>Understanding evidence in health informatics is critical to advancing the field. Students will be introduced to varying methods of examining research evidence in health informatics. More specifically, students will learn about differing methods for analyzing, understanding and summarizing evidence such as systematic reviews, meta analyses, meta-narrative reviews, ethnographic reviews, scoping reviews and other methods. Students may wish to explore differing topics within the context of their research interests.</td>
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<tr>
<td>HINF 531</td>
<td>1.5</td>
<td>Healthcare Information Security and Privacy</td>
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<td></td>
<td>An advanced review of security, privacy and confidentiality of healthcare information systems. Students will learn about healthcare information regulation, information risk decision making, cybersecurity and privacy management and methods for protecting digital health information. The course will include policy related, technical and legal aspects of healthcare information security and privacy.</td>
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<tr>
<td>HINF 535</td>
<td>1.5</td>
<td>Health Information Standards</td>
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<td>The study of health information standards deployed and used in Canada and elsewhere. The standards to be examined are controlled terminology and data exchange standards that include SNOMED CT, ICD-10-CA/CCI, LOINC, nursing terminologies, HL7V2.x, HL7V3/CDA, FHIR and IHE. The topics to be addressed include the nature of standards, their historical evolution and lifecycles for standards from initial development, distribution to maintenance.</td>
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<tr>
<td>HINF 536</td>
<td>1.5</td>
<td>Controlled Terminology Standards</td>
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<td>Examines the adoption and management of controlled terminologies in health care organizations. In terminology adoption it covers the planning, design, implementation, use, support and evaluation of terminologies in health IT applications. Terminology management covers the development, publishing, distribution and maintenance of terminology content, services and tools as organizational assets. Examples of terminologies to be covered include SNOMED CT, ICD-10-CA/CCI, LOINC, NDC/PDC/PATCC/ RxNorm and nursing terminologies.</td>
</tr>
<tr>
<td>HINF 537</td>
<td>1.5</td>
<td>Health Information Exchange Standards</td>
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<td>Explores the appropriate use of controlled terminologies in the adoption of health information exchange (HIE) standards in health care organizations. Covers the entire standards lifecycle in planning, development, implementation, use, maintenance and evaluation of HIE standards, resources and tools. Examples of HIE standards to be covered include HL7, CDA, FHIR, DICOM, templates, HIE integration profiles, clinical information models and openEHR.</td>
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<td>HINF 538</td>
<td>1.5</td>
<td>Electronic Health Record</td>
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<td>Describes the EHR initiatives underway in Canada and around the world. Assesses the compatibility of selected provincial initiatives with the federal level EHR intentions. Contrasts Canadian EHR experiences with those in the United States and other parts of the world. Identifies the issues and challenges to the wide spread introduction of EHRs across the Canadian health care system.</td>
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<td>HINF 540</td>
<td>1.5</td>
<td>Evaluation of e-Health</td>
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<td>Practical insights and understanding of an evaluation process for e-health initiatives. Includes assessing the effectiveness of e-health programs, evaluation design, data collection and analysis, as well as recommendations to assist decision-makers.</td>
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<td>HINF 550</td>
<td>1.5</td>
<td>Procurement in Health Informatics</td>
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<td>An introduction to the procurement process in health informatics. Covers key decision making aspects in the analysis and selection of health information systems. An important goal is to have students appreciate the dynamics and compromises which take place when a health care authority/agency selects information technology to primarily support its work practices.</td>
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<tr>
<td>HINF 551</td>
<td>1.5</td>
<td>Health Information Systems Design</td>
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<td>HINF 552</td>
<td>1.5</td>
<td>Health Information Security and Privacy</td>
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<td>Examines the major health system databases and how they can be analyzed to create an understanding of health issues and problems that can be used for strategic planning, ongoing program management, evaluation and visualization. By working with real data and real problems, students will learn basic tools and methods of health system data science and analytics.</td>
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<tr>
<td>HINF 553</td>
<td>1.5</td>
<td>Epidemiology and Public Health Informatics</td>
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<td>Examines the principles and methods of epidemiology. Focuses on the design, implementation and execution of epidemiological analyses using health information applications applied to health services planning, policy formulation, disease outbreak management and population health assessment. Covers integration of multiple data sources for aggregate analysis. Includes an introduction to public health informatics.</td>
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<tr>
<td>HINF 555</td>
<td>1.5</td>
<td>Health Systems Data Analytics</td>
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<td></td>
<td>Examines the major health system databases and how they can be analyzed to create an understanding of health issues and problems that can be used for strategic planning, ongoing program management, evaluation and visualization. By working with real data and real problems, students will learn basic tools and methods of health system data science and analytics.</td>
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<td>HINF 556</td>
<td>1.5</td>
<td>Patient Safety and Quality in Health Informatics</td>
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<td>Presents how health information technologies, methods, approaches and techniques can improve the quality and safety of citizen care from hospital through to the home and community. Covers how health technologies and the processes used to design, develop, implement and maintain them ensure ongoing systems safety. Challenges and issues in developing healthcare information systems that reduce errors and do not inadvertently introduce new errors will be discussed.</td>
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<td>HINF 557</td>
<td>1.5</td>
<td>Project Management in Health Informatics</td>
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<td>An introduction to the essentials of project management and the project life cycle. Students will also cover information technology management and change management knowledge areas as related to healthcare information technology project management. Course topics include project lifecycle management, and all project processes including: project charter, network diagramming, scope management, cost management, risk management, issue management, change management, scheduling and schedule management.</td>
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<tr>
<td>HINF 558</td>
<td>1.5</td>
<td>Health Systems Data Analytics</td>
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<td>Examines the major health system databases and how they can be analyzed to create an understanding of health issues and problems that can be used for strategic planning, ongoing program management, evaluation and visualization. By working with real data and real problems, students will learn basic tools and methods of health system data science and analytics.</td>
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</table>
HINF 573  
**Units:** 1.5  
**Applied Biostatistics**  
A computer laboratory course primarily designed to provide practical experience in running SPSS software, interpreting output and presenting findings in Figures and Tables, suitable for publications or dissertations. Topics include: understanding statistics, data management and cleaning, recode and compute statements, scale development (Cronbach's alpha), t-tests, chi-square analyses, correlation and logistic regression. The skills learned are those commonly used in quantitative research for health and social sciences.

HINF 574  
**Units:** 1.5  
**Modelling and Simulation in Healthcare**  
Examines a range of systems modeling tools and methodologies for dealing with complex health care systems. Uses systems thinking as a means of tackling health care domain problems where it involves interaction of many professionals across large complex organization structure. Includes qualitative and quantitative model building.  
**Note:** Credit will be granted for only one of HINF 574, HINF 591 (if taken in the same topic).

HINF 575  
**Units:** 1.5  
**Human Factors in Healthcare**  
Introduces a framework for considering human factors in health informatics. Includes study of human-computer interaction in the design of a range of health informatics applications, user analysis, workflow modelling, consideration of methods of evaluating system usability and socio-technical aspects of successful healthcare system design. In addition, approaches to the design of systems that are safe and that reduce human error in healthcare will be emphasized.

HINF 580  
**Units:** 1.5  
**Health Informatics Graduate Seminar**  
Key themes, issues and trends in Health Informatics. Consists of presentations by faculty and students on different Health Informatics subject areas.

HINF 590  
**Units:** 1.5  
**Directed Studies in Health Informatics**  
An opportunity to pursue directed readings or a project under the supervision of a faculty member. Students may take this course up to a maximum of two times throughout the program.  
**Note:** A student's supervisor can instruct only one directed studies course.

HINF 591  
**Units:** 1.5  
**Topics in Health Informatics**  
Advanced topics in various areas of health informatics. Topics vary depending on faculty interests and availability. Students may take this course more than once.

HINF 595  
**Units:** 1.5 or 3.0  
**Informatics Research Practicum**  
Provides hands-on, mentored experiences with several aspects of faculty-based research, for example, the conceptualization of a study, study design, applying for funding, obtaining ethical approval, accessing the study sites, collecting and analyzing data, writing and knowledge translation.  
**Notes:**  
- Arranged with a specific faculty member.  
- May be taken as one- or two-term course for a maximum of 3.0 units.  
**Grading:** INP, COM, N, F.

HINF 597  
**Units:** 1.5  
**Field Project in Health Informatics**  
The student is required to carry out an independent field project within his/her field of specialization under the supervision of a faculty member.  
**Prerequisite(s):** Admission to the Graduate Certificate in Health Terminology Standards.

HINF 598  
**Units:** 3.0  
**Research Project**  
The student is required to conduct a major research project in health informatics under the supervision of a faculty member.  
**Grading:** INP, COM, N, F.

HINF 599  
**Units:** 6.0  
**Health Informatics Thesis**  
The thesis provides the student with the opportunity of conducting original research and interpretation of those results in Health Informatics.  
**Grading:** INP, COM, N, F.

HINF 602  
**Units:** 1.5  
**Theories in Health Informatics**  
Advanced course on scientific theories relevant to health informatics. Faculty will assign key readings from health informatics, information systems, computer science and related disciplines. Students will: demonstrate the principles of theory and conceptual framework development for use in research; present critical appraisals of conceptual models and theoretical frameworks used in existing research and apply them to health informatics; and may identify an appropriate theory or conceptual model to incorporate into their subsequent dissertation research.

HINF 603  
**Units:** 1.5  
**Methods in Health Informatics**  
Advanced course on methods that are relevant to health informatics. Faculty will assign key readings drawn from health informatics, information systems, computer science and related disciplines. Students are expected to present and critique the papers and to discuss their relevance to the health informatics discipline. Through this course students may select a method for incorporation in their dissertation research.

HINF 680  
**Units:** 1.5  
**Health Informatics PhD Seminar**  
Key themes, issues, and trends in Health Informatics. Consists of presentations by faculty and students on different Health Informatics subject areas.

HINF 693  
**Units:** 3.0  
**Candidacy Exam**  
Students enroll in 693 for the duration of their preparations for their candidacy examinations. This begins at the time a student first enrolls in the PhD program and continues until candidacy requirements have been completed, normally at the end of first year of program.  
**Grading:** INP, COM, N, F.

HINF 699  
**Units:** 30.0  
**Dissertation**  
**Prerequisite(s):** HINF 693.  
**Grading:** INP, COM, N, F.

**HSD**

**Human and Social Development**

**Interdisciplinary Courses**

**Faculty of Human and Social Development**

HSD 580  
**Units:** 1.5 or 3.0  
**Special Topics in Human and Social Development**  
A variable content course focusing on the policy, practice and/or research interests of faculty and students in the Faculty of Human and Social Development.  
**Notes:**  
- May be taken more than once for credit in different topics.  
- May be offered as a joint undergraduate and graduate class.

HSD 590  
**Units:** 1.5-3.0  
**Directed Studies**  
Individual studies under the direct supervision of one or more faculty members. The content, credit value and method of evaluation must be approved by the instructor and the Graduate Adviser prior to registering in this course.  
**Notes:**  
- May be taken more than once for credit in different topics.  
- Pro Forma required.

**HSTR**

**History**

**Department of History**

**Faculty of Humanities**

HSTR 500  
**Units:** 1.5  
**Formerly: HIST 500**

**Histotography**  
Surveys the diverse answers given to the question, “What is history?” Exploration of the nature of historical knowledge through examination of major changes in theory, method and practice within the discipline. Students articulate their understanding of what being an historian entails. Specific topics covered may vary with the instructor.  
**Note:** Credit will be granted for only one of HSTR 500, HIST 500.
HSTR 501 Units: 1.5
American History
New and classic readings in the history of Colonial America and the United States. Themes include indigenous societies, conquest, gender, religion, race, slavery, sexuality, politics and economy.
Note: Credit will be granted for only one of HSTR 501, HSTR 501A, HSTR 501B, HIST 501A, HIST 501B.

HSTR 502A Units: 1.5
Formerly: HIST 502A
Early Modern British History
Social, cultural and political history of early modern England, with an emphasis on the 17th century. Topics include crime and print culture, the British Civil Wars, the execution of Charles I, radical religion and the Interregnum, patriarchy and authority, class conflict and social hierarchy, parents and children, marriage and gender. Provides advanced students a survey of some of the main primary sources, important secondary works and historiographical issues.
Note: Credit will be granted for only one of HSTR 502A, HIST 502A.

HSTR 502B Units: 1.5
Formerly: HIST 502B
Modern British History
Social, cultural and political history of modern England. Topics may include government and the state, war and society, crime and punishment, monarchy, and elite and popular cultures. Provides advanced students a survey of some of the main primary sources, important secondary works and historiographical issues.
Note: Credit will be granted for only one of HSTR 502B, HIST 502B.

HSTR 503A Units: 1.5
Formerly: HIST 503A
Pre-1900 Canadian History
Provides an in-depth look at historical writing about pre-1900 Canada. Explores a variety of historical approaches and covers a number of major topics in the field. Topics may include indigenous histories, First Nations-settler encounters, politics and war, rural and urban experiences, liberalism and the state, and issues of race, religion, gender and class. Focus on historiographical and analytical skills.
Note: Credit will be granted for only one of HSTR 503A, HIST 503A.

HSTR 503B Units: 1.5
Formerly: HIST 503B
Post-1900 Canadian History
Examines historical writing about 20th century Canada, taking a chronological and thematic approach to recent literature. Topics may include: gender and the family, law and moral regulation, work, the environment, First Nations, politics and the state, nationalism and regionalism, and the experience and commemoration of war. Focus on historiographical and analytical skills.
Note: Credit will be granted for only one of HSTR 503B, HIST 503B.

HSTR 504A Units: 1.5
Formerly: HIST 504A
Europe, 1500-1800
Advanced study of the transformation of European society and culture during the early modern period. May take a topical or temporal focus.
Note: Credit will be granted for only one of HSTR 504A, HIST 504A.

HSTR 504B Units: 1.5
Formerly: HIST 504B
Europe since 1800
Advanced study of the transformation of European politics, society and culture in the modern era. May take a topical or temporal focus.
Note: Credit will be granted for only one of HSTR 504B, HIST 504B.

HSTR 505 Units: 1.5
Formerly: HIST 514, HIST 514
World History
Examines recent contributions to the field of world history that allow both for a focus on study of particular themes as well as the exploration of broader historiographical and theoretical debates. Students are encouraged to pursue their own particular interests in the subject.
Note: Credit will be granted for only one of HSTR 505, HIST 514, HIST 514.

HSTR 506 Units: 1.5
Formerly: HIST 506A, HIST 506B, HIST 506A, HIST 506B
Medieval Europe
The major fields, sources and approaches in medieval history and medievalism.
Note: Credit will be granted for only one of HSTR 506, HIST 506A, HIST 506B, HIST 506A, HIST 506B.

HSTR 507 Units: 1.5
Latin America 1492-1900
Studies the historiographical debates concerning possession and representation in Latin America from contact to the early national period. Topics include resistance and accommodation to colonialism, Creole patriotism, and the creation of rhetorics of pluri-ethnic nationalism.

HSTR 508A Units: 1.5
Formerly: HIST 508A
China in Local and Global History
Examines the local history and global networks of Tibet, Taiwan, and Hong Kong as well as the North China Plain (around Beijing), the Yangzi River Delta (around Shanghai), and the Pearl River Delta (around Canton) in China up to the mid-20th century. Emphasis on both local and global approaches to the six regions and to modern China beyond the limits of its nation-state history.
Note: Credit will be granted for only one of HSTR 508A, HIST 508A, HIST 465 (if taken as A01 in Jan-Apr 2015), HIST 465A, HIST 439 (if taken as A01 in Sept-Dec 2011), HIST 508A.

HSTR 508B Units: 1.5
Also: HIST 481
Formerly: HIST 508B
A Global History of the Chinese Overseas
Examination of the Chinese diaspora in Southeast Asia, North America and other regions. Emphasis on the emigration from China, transformation of Chinatowns and development of global networks and transnational identities of the Chinese overseas. May include exploration of the diasporic experiences of Japanese, Korean, Indian and other Asian migrants in the global arena.
Note: Credit will be granted for only one of HSTR 508B, HIST 508B, HSTR 481, HIST 451.

HSTR 509A Units: 1.5
Formerly: HIST 509A
Modern Japanese History
A survey of historiographical issues in Japan's history from the end of Tokugawa to the present day. Analyzes the debates regarding peasant struggles in late Tokugawa, the impact of imperial arrivals in the 1850s, the nature of the Meiji restoration, migration and the rise of Japanese imperialism, and the national polity in the interwar years. Concludes with World War II and Japan's occupation and subsequent economic transformations.
Note: Credit will be granted for only one of HSTR 509A, HIST 509A.

HSTR 509B Units: 1.5
Formerly: HIST 509B
Migration, Race and Empire: Canada and the Transpacific
Brings together the histories of the Pacific and British Columbia using a translocal lens to analyze critically the intersections between race, colonialism and indigeneity from 1840 to the 1950s. Specific attention to Asian Canadian experiences on Vancouver Island and the impact of conflicting empires (British, American and Japanese). Utilizes critical anti-racist and feminist theory, and offers possibilities for innovative public history projects and community-based, action research.
Note: Credit will be granted for only one of HSTR 509B, HIST 509B.

HSTR 511 Units: 1.5
Formerly: HIST 511
Military History
Examines historiographical issues in military history. Themes include: technology and science and war; social and cultural history of war and society; the evolution of military organization and military techniques; intellectual and philosophical writing on war and armed forces; military intelligence; history of air power; and naval and maritime affairs.
Note: Credit will be granted for only one of HSTR 511, HIST 511.

HSTR 512 Units: 1.5
Formerly: HIST 512
Intelectual History
Advanced study of intellectual history. Topics to be explored may include the history of intellectual history, the similarities and differences between intellectual history and other genres of historical analysis, the rise of atheism and unbelief in early modern Europe and Enlightenment in Europe.
Note: Credit will be granted for only one of HSTR 512, HIST 512.
HSTR 513 - Units: 1.5
Formerly: HIST 513
History of Gender, Sexuality and the Body
Explores selected topics in gender history, the history of sexuality and the history of the body and addresses current theoretical and methodological debates within these fields. Focus is primarily on American history, although Canadian and British readings may be included. Explores shifting understandings of femininity, masculinity and sexualities, as well as relationships between gender and class, race, ethnicity, religion, sexualities and the body.
Note: Credit will be granted for only one of HSTR 513, HIST 513.

HSTR 515A - Units: 1.5
Formerly: HIST 515A
Public History
Provides an overview of the branch of the discipline that involves communicating the past non-academic audiences and analyzing applicationsof history outside of the university. Students meet practitioners of public history, making professional contacts and exploring non-academic applications of their training. Connected with these practical activities are analytical questions as they contemplate how history can be carried outside of the academic world. Students also discuss its purpose, importance and meaning.
Note: Credit will be granted for only one of HSTR 515A, HIST 515A, HIST 519 (if taken in the same topic).

HSTR 516 - Units: 1.5
Formerly: HIST 516
Digital History
Explores specific computing applications used in the field known as “digital history,” and how digital history is changing the way we think about History and the past. Emphasis on student projects, student presentations and discussions of selected readings on the big questions facing the discipline, including “Is this really a revolution?”
Note: Credit will be granted for only one of HSTR 516, HIST 516.

HSTR 517 - Units: 1.5
Formerly: HIST 517
Cultural History and Theory
Explores the theory and practice of cultural history, focusing on culture as topic and as methodology. Students examine the approaches of cultural historians who either seek out new sources, or read traditional sources against the grain to provide answers to new questions. Themes may include: ritual, symbolism and meaning; objects and representation; colonialism and difference; popular culture, storytelling, and language. Time period and geographical focus vary with the research area of the instructor.
Note: Credit will be granted for only one of HSTR 517, HIST 517.

HSTR 518 - Units: 1.5
Formerly: HIST 518
Political History
Examines the evolution of the state and the negotiation of power in North America. Topics may include federalism, party and bureaucratic developments, mass media and politics, and political leadership.
Note: Credit will be granted for only one of HSTR 518, HIST 518.

HSTR 519 - Units: 1.5
Formerly: HIST 519
Special Topics
Notes:
  - Credit will be granted for only one of HSTR 519, HIST 519 (if taken in the same topic).
  - May be taken more than once for credit in different topics with permission of the department.

HSTR 520 - Units: 1.5
Formerly: HIST 520
Field School in Ethnohistory
Experiential and community-based. Students move to the host First Nation’s community to work on research the community has prioritized. Four weeks are spent in the community followed by four weeks to complete the research project.
Note: Credit will be granted for only one of HSTR 520, HIST 520.

HSTR 521A - Units: 1.5
Formerly: HSTR 521, HIST 521
Medieval Law and Administration
The origins and development of Western European civil, canon and common law. The history of law and jurisprudence, of the relationships of law and society and of the role of law in the growth of governance and order. Direct work on legal texts and records.
Note: Credit will be granted for only one of HSTR 521A, HSTR 521, HIST 521.

HSTR 521B - Units: 1.5
Formerly: HSTR 521, HIST 521
British Legal History
Social, cultural and political history of the law in England. Topics include crime, policing, the administration of justice, and punishments. Intended to give advanced students a general introduction to some of the main primary sources, important secondary works and historiographical issues.
Note: Credit will be granted for only one of HSTR 521B, HSTR 521, HIST 521.

HSTR 522 - Units: 1.5
Formerly: HIST 522
The Social History of Religion
Explores selected topics in the social history of religion in the context of Canada, the United States and Britain in the nineteenth and twentieth centuries. Focuses on Christianity, but also touches on other faith traditions. Topics to be explored may include popular religion, religion and mass culture, spirituality, colonialism, secularisation, immigration and assimilation, religion and health, religious conflicts and prejudices and issues of class, race, gender, sexuality and family life as they relate to religion.
Note: Credit will be granted for only one of HSTR 522, HIST 522.

HSTR 523 - Units: 1.5
Formerly: HIST 523
History of Science and Technology
Advanced study of the history of science. Topics to be explored may include the history of the history of science, the Scientific Revolution, the rise of the “science of man” in early modern Europe, science and Enlightenment, science and religion, and science and society in Britain, 1600-1945. May include topics in the history of technology.
Note: Credit will be granted for only one of HSTR 523, HIST 523.

HSTR 524 - Units: 1.5
Formerly: HIST 524
Ethnohistory
Examines the major issues facing ethnohistorians generally but with an emphasis on ethnohistory with respect to Indigenous peoples.
Note: Credit will be granted for only one of HSTR 524, HIST 524.

HSTR 525 - Units: 1.5
Formerly: HIST 525
Medical History
Examines the evolution of medical practice and the history of health and illness, including surgery and the development of hospitals.
Note: Credit will be granted for only one of HSTR 525, HIST 525.

HSTR 526 - Units: 1.5
Formerly: HIST 526
Ethnohistory
Examines the major issues facing ethnohistorians generally but with an emphasis on ethnohistory with respect to Indigenous peoples.
Note: Credit will be granted for only one of HSTR 526, HIST 526.

HSTR 527 - Units: 1.5
Formerly: HIST 527
Military History
Examines the history of military technology, tactics, and organization.
Note: Credit will be granted for only one of HSTR 527, HIST 527.
### HSTR 600 - Units: 1.5
**Histriography for Dissertation**

### HSTR 601 - Units: 1.5
**Advanced Topics in American History**

### HSTR 602A - Units: 1.5
**Advanced Topics in Early Modern British History**

### HSTR 602B - Units: 1.5
**Advanced Topics in Modern British History**

### HSTR 603A - Units: 1.5
**Advanced Topics in Pre-1900 Canadian History**

### HSTR 603B - Units: 1.5
**Advanced Topics in Post-1900 Canadian History**

### HSTR 604A - Units: 1.5
**Advanced Topics in Early Modern Europe**

### HSTR 604B - Units: 1.5
**Advanced Topics in Modern Europe**

### HSTR 605 - Units: 1.5
**Advanced Topics in World History**

### HSTR 607 - Units: 1.5
**Advanced Topics in Latin American History**

### HSTR 608A - Units: 1.5
**Advanced Topics in Chinese History**

### HSTR 608B - Units: 1.5
**Advanced Topics in the Chinese Diaspora**

### HSTR 609 - Units: 1.5
**Advanced Topics in Japanese History**

### HSTR 611 - Units: 1.5
**Advanced Topics in Military History**

### HSTR 612 - Units: 1.5
**Advanced Topics in Intellectual History**

### HSTR 613 - Units: 1.5
**Advanced Topics in Gender and Sexuality**

### HSTR 615 - Units: 1.5
**Advanced Topics in Public History**

### HSTR 616 - Units: 1.5
**Advanced Topics in Digital History**

### HSTR 617 - Units: 1.5
**Advanced Topics in Cultural History and Theory**

### HSTR 618 - Units: 1.5
**Advanced Topics in Political History**

### HSTR 622 - Units: 1.5
**Advanced Topics in Religious History**

### HSTR 623 - Units: 1.5
**Advanced Topics in Science and Technology**

### HSTR 626 - Units: 1.5
**Advanced Topics in Ethnohistory**

### HSTR 628 - Units: 1.5
**Advanced Field School in Ethnohistory**

### HSTR 630 - Units: 1.5
**Directed Study Geographical Field**

**Note:** May be taken more than once for credit in different topics with permission of the department.

### HSTR 631 - Units: 1.5
**Directed Study Topical Field**

**Note:** May be taken more than once for credit in different topics with permission of the department.

### HSTR 632 - Units: 1.5
**PhD Candidacy Examinations**

Students enrol in 693 for the duration of their preparations for their candidacy examinations. This begins at the time a student first enrolls in the PhD program and continues until candidacy requirements have been completed.

**Note:** Credit will be granted for only one of HSTR 693, HIST 693.

**Grading:** INP, COM, N, F.

### HSTR 635 - Units: 1.5
**Dissertation Proposal**

**Grading:** INP, COM, N, F.

### HSTR 636 - Units: 25.5-36.0
**PhD Thesis**

**Formerly:** HIST 699

**Note:** Credit will be granted for only one of HSTR 699, HIST 699.

**Prerequisite(s):** HSTR 693.

**Grading:** INP, COM, N, F.

### HUMA

#### Humanities

**Faculty of Humanities**

**HUMA 500 - Units: 1.5**

**Professional Academic Writing**

A writing intensive course for students in a MA or PhD thesis program in the Faculty of Humanities. Investigate best practices for developing academic writing skills; practice invention, drafting, and revision of multiple modes of academic writing; experiment with strategies for understanding the written academic discourse of academic fields; prepare original, scholarly material and be guided through the process of publishing it.

**Prerequisite(s):** Must be registered in a graduate program in the Humanities.

### IED

#### Indigenous Education

**Faculty of Education**

**IED 510 - Units: 1.5**

**Leadership and Governance for Language Revitalization**

Students will develop their understanding of leadership skills and processes necessary to implement successful language and culture programs. Topics will include: planning, proposal writing, budgeting, administration, project management, as well as the place & effect of language policies at the provincial, national, international levels, as well as tribal/indigenous governance models.

**Grading:** INP, COM, N, F.
**IED 598 - IN 601**

**IED 598**  
Units: 3.0  
**Major Project**  
Evidence of independent research work will be presented in the form of an extended paper, project, or report as determined with the supervisory committee. Students will design their project in partnership with an Indigenous community or Indigenous organization. The project will enhance the community or organization’s capacity to support language revitalization while providing an opportunity for students to approach the real-world challenges of language revitalization in an Indigenous context.  
Grading: INP, COM, N, F.

**IED 599**  
Units: 4.5  
**Thesis**  
Research on a topic chosen in consultation with the student’s supervisory committee.  
Grading: INP, COM, N, F.

**IGOV**  
Indigenous Governance  
Faculty of Human and Social Development

**IGOV 520**  
Units: 1.5  
**Indigenous Governance**  
A critical reading of important works in the field, an intellectual framework for understanding key questions and contemporary conflicts within Indigenous societies, and a critical perspective of the relationship between Indigenous peoples and the state.  
Prerequisite(s): Admission to MA program in Indigenous Governance.

**IGOV 530**  
Units: 1.5  
**Indigenous Research Methods**  
A perspective on the methods and approaches used in the study of Indigenous issues, providing the basic tools and methods used for conducting applied research, as well as an exploration of the practical, ethical, and political issues involved in conducting research in Indigenous communities.  
Prerequisite(s): Admission to MA program in Indigenous Governance.

**IGOV 540**  
Units: 1.5  
**Indigenous Resurgence**  
An introduction to the spiritual and cultural foundations of Indigenous governance systems, and an examination of how traditional values, principles and worldviews shape Indigenous thought and action in resistance to colonialism.  
Prerequisite(s): Admission to MA program in Indigenous Governance.

**IGOV 550**  
Units: 1.5  
**Indigenous Peoples and Self Determination**  
A focused analysis of current processes to decolonize the relationships between Indigenous peoples and states (as well as other colonial entities), with particular emphasis on questions of land tenure, sovereignty, nationhood, self-determination, and treaty-making in a comparative context.  
Prerequisite(s): Admission to MA program in Indigenous Governance.

**IGOV 560**  
Units: 1.5  
**Indigenous Peoples and Globalization**  
An examination of how processes of globalization and neo-colonialism impact Indigenous peoples worldwide and strategies Indigenous peoples around the world are using to confront these economic, social, political and cultural pressures in order to regenerate their communities.  
Prerequisite(s): Admission to MA program in Indigenous Governance; or permission of the faculty.

**IGOV 570**  
Units: 1.5  
**Indigenous Women and Resistance**  
An exploration of the strategies Indigenous women engage in resistance to colonialism with particular attention paid to women who root their resistance in traditional Indigenous philosophies, governance practices and ways of being.  
Prerequisite(s): Admission to MA program in Indigenous Governance; or permission of the faculty.

**IGOV 575**  
Units: 3.0  
**Mentorship**  
Mentorships provide students with counselling and advice to support personal well-being, professional development and academic performance, and consists of regular writing assignments and small group meetings with their faculty supervisor throughout the academic year.  
Note: Credit will be granted for only one of IGOV 575, IGOV 580.  
Prerequisite(s): Admission to MA program in Indigenous Governance.  
Pre- or Corequisite(s): All of IGOV 520, IGOV 530, IGOV 540, IGOV 550.

**IGOV 590**  
Units: 1.5  
**Directed Readings**  
Individually structured reading or research seminars under the direction of a participating faculty member, allowing students to pursue their interests in topics related to Indigenous governance but not specifically covered in the seminars.  
Note: May not be taken more than once for credit.

**IGOV 595**  
Units: 1.5  
**Special Topics in Indigenous Governance**  
Seminars focusing on issues of particular interest and relevance.  
Note: May be taken more than once for credit in different topics.  
Prerequisite(s): Admission to MA program in Indigenous Governance; or permission of the faculty.

**IGOV 598**  
Units: 4.5 or 6.0  
**Community Governance Project**  
Graduate course in the Indigenous Governance program administered by the Faculty of Graduate Studies. Projects are geared toward providing a practical learning experience and opportunity for students to face the real-world challenges of governance in an Indigenous context. They also serve as a crucial function for affiliated communities in providing access to the University’s resources and expertise through the students’ participation in projects to enhance the community’s governance capacity.  
Community governance project interns will work on a designated research or policy development project in an Indigenous organization, under the direction of a project management team that includes community leaders and IGOV faculty. Internship placements must be approved by the Director, and will typically involve 100 hours of work in the community and the completion of a comprehensive report based on the internship experience.  
Note: Only students who entered the MA program prior to September 2009 need to register in the 4.5 unit section of IGOV 598 (requires permission of the department).  
Students who start their MA program on or after September 2009 need to register in the 6.0 unit section of IGOV 598.  
Prerequisite(s): All of IGOV 520, IGOV 530, IGOV 540, IGOV 550, IGOV 575.  
Grading: INP, COM, N, F.

**IGOV 599**  
Units: 6.0  
**Thesis**  
Grading: INP, COM, N, F.

**IN**  
Indigenous Nationhood  
Faculty of Graduate Studies, Faculty of Human and Social Development, Faculty of Law, and Faculty of Social Sciences

**IN 533**  
Units: 1.5  
**Special Topics in Indigenous Nationhood**  
Note: May be taken more than once for credit in different topics.

**IN 601**  
Units: 1.5  
**Foundations of Indigenous Nationhood**  
An examination of key issues and debates, methods and frameworks in the study of Indigenous Nationhood. Involves a survey of the major literature in the fields of Indigenous politics, governance and law. This is a required foundational course for all IN Graduate Certificate students.
### IN 697
**Units:** 1.5-6.0
**Capstone Experience**
An integration and synthesis of concepts, principles and practices discussed throughout the program. Students must be able to demonstrate their knowledge of the field of Indigenous Nationhood through either a comprehensive examination of Indigenous Nationhood or a committee-approved community internship, or other community-based work or service-integrated learning opportunity approved by the Program committee.

**Note:** Students taking the Indigenous Nationhood certificate concurrently with another program should check whether credit for this course can be used toward their program.

**Grading:** INP, COM, N, F.

### INGH Indigenous Health Studies School of Public Health and Social Policy Faculty of Human and Social Development

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>INGH 520</td>
<td>1.5</td>
<td>Community Engagement and Leadership</td>
</tr>
<tr>
<td>INGH 521</td>
<td>1.5</td>
<td>Indigenous Public Health and Social Policy</td>
</tr>
<tr>
<td>INGH 522</td>
<td>1.5</td>
<td>Indigenous Health Research Methodologies</td>
</tr>
</tbody>
</table>

**Notes:**
- The concepts of respect, trust and cultural safety and their historical significance in engaging with Indigenous communities are explored. De-colonizing practices are emphasized through the exploration of relational practice and community capacity building as methods for effective engagement of community. Topics include the implications of recognizing the communal ownership of knowledge within Indigenous culture; the value of Indigenous knowledge and mentorship in the emergence of Indigenous health leaders are explored.

**Note:** A requirement of this course is a condensed five-day on-campus seminar.

### ITAL Italian Department of Hispanic and Italian Studies Faculty of Humanities

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITAL 503</td>
<td>1.5</td>
<td>Core Reading List Course I</td>
</tr>
<tr>
<td>ITAL 505</td>
<td>1.5</td>
<td>Medieval Literature</td>
</tr>
<tr>
<td>ITAL 590</td>
<td>1.5 or 3.0</td>
<td>Directed Studies</td>
</tr>
<tr>
<td>ITAL 598</td>
<td>3.0</td>
<td>Master's Essay</td>
</tr>
</tbody>
</table>

**Notes:**
- May be taken more than once for credit in different topics.
- Pro Forma required.

### LAW Law Faculty of Law

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAW 501</td>
<td>1.5</td>
<td>Graduate Seminar in Law and Society</td>
</tr>
<tr>
<td>LAW 502</td>
<td>1.5</td>
<td>Directed Studies in Applied Legal Methodology</td>
</tr>
<tr>
<td>LAW 509</td>
<td>1.5-3.0</td>
<td>Directed Studies in Law</td>
</tr>
<tr>
<td>LAW 599</td>
<td>9.0</td>
<td>LLM Thesis</td>
</tr>
<tr>
<td>LAW 690</td>
<td>1.5-3.0</td>
<td>Directed Studies in Law</td>
</tr>
<tr>
<td>LAW 693</td>
<td>3.0</td>
<td>PhD Candidacy Examinations</td>
</tr>
<tr>
<td>LAW 699</td>
<td>21.0-36.0</td>
<td>PhD Dissertation</td>
</tr>
</tbody>
</table>

**Notes:**
- May be taken more than once for credit in different topics.
- Pro Forma required.

### LING Linguistics Department of Linguistics Faculty of Humanities

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LING 500</td>
<td>1.5</td>
<td>Linguistic Field Methods</td>
</tr>
</tbody>
</table>

**Notes:**
- May be taken more than once for credit in different topics with permission of the department.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>LING 501</td>
<td>1.5</td>
<td>Linguistics for Language Revitalization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>An introduction to Linguistic concepts and terminology, providing a foundation for engaging with Indigenous language documentation and revitalization, linguistic aspects of learning and teaching, and archival research. Topics include: the nature of sound systems and how they relate to writing systems, word structures and dictionaries; sentence structures and understanding texts.</td>
</tr>
<tr>
<td>LING 503</td>
<td>1.5</td>
<td>Introduction to Syntax</td>
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<tr>
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<td></td>
<td>A graduate level introduction to the major subfields of syntax, reflecting recent developments in syntactic theory.</td>
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<tr>
<td>LING 504</td>
<td>1.5</td>
<td>Current Issues in Morphology</td>
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<tr>
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<td></td>
<td>Recent developments in morphological theory.</td>
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<td>Note: May be taken more than once for credit to a maximum of 3 units.</td>
</tr>
<tr>
<td>LING 505</td>
<td>1.5</td>
<td>Introduction to Phonology</td>
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<tr>
<td></td>
<td></td>
<td>A graduate level introduction to the major subfields of Phonology, reflecting recent developments in phonological theory.</td>
</tr>
<tr>
<td>LING 508</td>
<td>1.5 or 3.0</td>
<td>Current Issues in Generative Grammar</td>
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<tr>
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<td>Selected topics reflecting ongoing work in generative theory.</td>
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<td>Note: May be taken more than once for credit.</td>
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<tr>
<td>LING 509</td>
<td>1.5</td>
<td>Sociolinguistics</td>
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<tr>
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<td>Selected topics in recent research related to language variation such as bilingualism, language and gender, language attitudes, social dialects. Each registrant will select a particular topic for individual research.</td>
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<td>Note: May be taken more than once for credit in different topics to a maximum of 3 units.</td>
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<tr>
<td>LING 510</td>
<td>1.5-3.0</td>
<td>Current Issues in Phonology</td>
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<td>An examination of recent developments in phonological theory.</td>
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<td>Note: May be taken more than once for credit.</td>
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<tr>
<td>LING 517</td>
<td>1.5</td>
<td>Experimental Phonetics Laboratory</td>
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<tr>
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<td>Review of recent research in the phonetic and acoustic analysis of speech and in spoken language processing. A focus on experimental procedures designed to allow students to pursue individual topics in speech research.</td>
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<td>Note: May be taken more than once for credit to a maximum of 3 units.</td>
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<tr>
<td>LING 520</td>
<td>1.5-3.0</td>
<td>Pacific Rim Languages</td>
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<td>An overview of the structure of selected Indigenous languages spoken around the Pacific Rim.</td>
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<td>Note: May be taken more than once for credit to a maximum of 3 units.</td>
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<tr>
<td>LING 527</td>
<td>1.5</td>
<td>Topics in Historical and Comparative Linguistics</td>
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<td>Study of principles of historical and comparative linguistics.</td>
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<td>Note: May be taken more than once for credit to a maximum of 3 units.</td>
</tr>
<tr>
<td>LING 531</td>
<td>1.5</td>
<td>Researching Community-Based Initiatives in Language Revitalization</td>
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<td>Also: IED 531</td>
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<td>An examination of language research in Indigenous communities. This course is project-based and introduces students to a range of issues in community-based language revitalization research. The diversity of languages and of community approaches will be highlighted.</td>
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<td>Note: Credit will be granted for only one of LING 531, IED 531.</td>
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<tr>
<td>LING 570</td>
<td>1.5-3.0</td>
<td>Psycholinguistics</td>
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<td>A seminar offered in collaboration with the department of Psychology. Selected topics of interest in understanding the comprehension and production of natural language are examined. The most recent topics have been word recognition and lexical access, sentence processing, discourse analysis, linguistic inference and the resolution of ambiguity, and the development of cognitive science interests in reasoning and discourse processes as well as the structure of mental representations.</td>
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<td>Also: PSYC 570</td>
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<tr>
<td>LING 572</td>
<td>1.5</td>
<td>The Structure of the Lexicon</td>
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<td>An introduction to the study of representations of lexical forms, specifically as they relate to psycholinguistic dimensions of the mental lexicon. Issues related to the structure of both the first and second language mental lexicons will be examined.</td>
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<tr>
<td>LING 573</td>
<td>1.5</td>
<td>Second Language Acquisition Theory and Research</td>
</tr>
<tr>
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<td>A survey and critical examination of the research on second language acquisition (SLA). Current issues and research findings related to the teaching and learning of second languages inside second language classrooms are also discussed.</td>
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<tr>
<td>LING 574</td>
<td>1.5</td>
<td>Seminar in Applied Linguistics</td>
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<td>A seminar on issues in applied linguistics, including an overview of second language learning and teaching principles, TESL/TEFL methodology, language situation contacts and multilingualism. Each participant selects a topic area of individual interest to report to the seminar.</td>
</tr>
<tr>
<td>LING 575</td>
<td>1.5</td>
<td>Research Methods in Applied Linguistics</td>
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<td>Designed to assist graduate students in developing skills necessary to design and implement research in the field of second language (SL) acquisition and applied linguistics. Examines various methods for conducting research, types of research designs, and the steps involved in planning and executing SL research projects. Students also develop skills in reading and evaluating published research in second language acquisition and applied linguistics.</td>
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<tr>
<td>LING 576</td>
<td>1.5</td>
<td>Form-Focused Instruction and Second Language Development</td>
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<td>Through a combination of reading and critical analysis of research studies, examines the current theoretical perspectives and research findings on the various roles that form-focused instruction and corrective feedback play in second language development.</td>
</tr>
<tr>
<td>LING 577</td>
<td>1.5</td>
<td>The Global Context of Language Revitalization</td>
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<td>Investigates language shift, maintenance, reclamation and revitalization. Topics may include global, social, cultural, economic, political, and historical factors involved in language use, and Indigenous and non-Indigenous language contexts around the world.</td>
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<tr>
<td>LING 578</td>
<td>1.5</td>
<td>Sociocultural Theory and Second Language Learning</td>
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<tr>
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<td>Designed to introduce graduate students to aspects of second language learning from the perspectives of sociocultural theory and cognitive development. Students will become familiar with key concepts and principles of sociocultural theory, such as mediation, activity theory, the genetic method, internalization, the zone of proximal development, private speech, and scaffolding; examine the growing body of research in language learning and teaching from this theoretical perspective; and consider its implications for language pedagogy.</td>
</tr>
<tr>
<td>LING 580</td>
<td>1.5 or 3.0</td>
<td>Linguistics Seminar</td>
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<td>The contents of this course will vary.</td>
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<td>Note: May be taken more than once for credit.</td>
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<tr>
<td>LING 586</td>
<td>1.5</td>
<td>Sound Structures for Applied Linguistics</td>
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<tr>
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<td></td>
<td>An investigation of the relationship between sound structures (as understood through phonetic theory, phonological theory, speech analysis) and applied linguistics (especially pronunciation teaching and second language acquisition).</td>
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<td>Prerequisite(s):</td>
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<tr>
<td></td>
<td></td>
<td>• One of LING 200, LING 300, LING 312, LING 338, LING 380, LING 412, LING 486, LING 505, LING 510, LING 517; or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• permission of the department.</td>
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<tr>
<td>LING 590</td>
<td>1.5 or 3.0</td>
<td>Directed Studies</td>
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<td>A course designed to enable students to pursue individual interests.</td>
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<td>Note: May be taken more than once for credit.</td>
</tr>
<tr>
<td>LING 592</td>
<td>3-0-0</td>
<td>Studies in Language and Gender</td>
</tr>
<tr>
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<td></td>
<td>A study of the relationship between gender socialization and pragmatics of language use. Each participant selects a topic of interest to research and report on as a term paper and to present as a seminar.</td>
</tr>
<tr>
<td>LING 596</td>
<td>1.5</td>
<td>Cross-Cultural Communication</td>
</tr>
<tr>
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<td></td>
<td>An examination of pragmatic linguistic factors affecting communication between cultural groups. Each participant selects a topic of interest to research and report on as a term paper and to present as a seminar.</td>
</tr>
</tbody>
</table>
**LING 598**  Units: 3.0  
**Major Research Paper**  
A major research paper (40-45 pages) reporting independent research under the direction of a faculty member. Students meet in a seminar weekly with the course instructor to discuss research topics including research designs, data collection and analyses, reporting and presentation research results, and other research related issues.  
Grading: INP, COM, N, F.

**LING 599**  Units: to be determined  
**MA Thesis**  
Grading: INP, COM, N, F.

**LING 601**  Units: 1.5  
**Current Directions in Syntactic Theory**  
Selected topics reflecting current research in syntactic theory.  
Notes:  
• May be taken more than once for credit in different topics.  
• Students who have completed equivalent prerequisites may request permission to register in the course.  
Prerequisite(s):  
• LING 503 or LING 508; or  
• permission of the department.

**LING 602**  Units: 1.5-3.0  
**Current Directions in Phonological Theory**  
Selected topics reflecting current research in Phonological Theory.  
Notes:  
• May be taken more than once for credit in different topics.  
• Students who have completed equivalent prerequisites may request permission to register in the course.  
Prerequisite(s):  
• LING 503 or LING 510; or  
• permission of the department.

**LING 690**  Units: 1.5 or 3.0  
**Directed Studies**  
A research topic will be pursued in depth under the direction of the student's supervisor. Students are expected to write a research paper (or papers) and to present a colloquium based on their work.  
Note: May be taken more than once for credit in different topics to a maximum of 3 units.

**LING 693**  Units: 3.0  
**Candidacy Examination**  
The candidacy requirement must be satisfied within three years of registration in the doctoral program (see Faculty of Graduate Studies regulations). The candidacy examination consists of two substantial, original research papers, one in the area of phonological or syntactic theory, understood broadly, and the other in an area agreed to by the student and the supervisor.  
Grading: INP, COM, N, F.

**LING 699**  Units: to be determined  
**PhD Dissertation**  
Note: Normally 18 units.
Prerequisite(s): LING 693.
Grading: INP, COM, N, F.

### MATH

#### Mathematics  
**Department of Mathematics and Statistics**  
**Faculty of Science**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 510</td>
<td>1.5</td>
<td>Abstract Algebra</td>
</tr>
<tr>
<td>MATH 520</td>
<td>1.5</td>
<td>Number Theory</td>
</tr>
</tbody>
</table>
| MATH 522    | 1.5   | Combinatorics  
Prerequisite(s): Permission of the department. |
| MATH 523    | 1.5   | Graph Theory  
Prerequisite(s): Permission of the department. |
| MATH 529    | 1.5   | Topics in Discrete Mathematics  
Note: May be taken more than once for credit in different topics with permission of the department. |
| MATH 530    | 1.5   | Real Analysis  
Abstract measure and integration; product measures; measures on locally compact spaces and the Riesz representation theorem; the Stone-Weierstrass theorem. |
| MATH 531    | 1.5   | Functional Analysis |
| MATH 532    | 1.5   | Introduction to Operator Theory |
| MATH 533    | 1.5   | Topics in Operator Theory and Operator Algebras  
Note: May be taken more than once for credit in different topics with permission of the department. |
| MATH 535    | 1.5   | Topics in Analysis  
Topics may include some of the following: ergodic theory, dynamical systems, potential theory, harmonic analysis.  
Note: May be taken more than once for credit in different topics with permission of the department. |
| MATH 538    | 1.5   | Complex Analysis  
Topics chosen from: conformal mappings, the Riemann mapping theorem, the maximum principle, infinite products, Picard's theorem, normal families, Hp-spaces, approximation by rational functions, the Riemann zeta function, analytic continuation and Riemann surfaces.  
Note: Students who have completed a course equivalent to MATH 438 may request permission to register in the course.  
Prerequisite(s):  
• One of MATH 330B, MATH 338, MATH 438; or  
• permission of the department. |
| MATH 540    | 1.5   | Topology |
| MATH 549    | 1.5   | Hours: 3-0-0  
Also: MATH 449 |
| MATH 550    | 1.5   | Topics in Applied Mathematics  
Note: May be taken more than once for credit in different topics with permission of the department. |
| MATH 551    | 1.5   | Differential and Integral Equations |
| MATH 555    | 1.5   | Topics in Probability  
Note: May be taken more than once for credit in different topics with permission of the department. |
| MATH 563    | 1.5   | Algebraic Number Theory |
| MATH 575    | 1.5   | Topics in Mathematical Biology  
Possible topics include population modelling, infectious disease dynamics, models of neuronal networks and models of gene regulatory networks.  
Note: May be taken more than once for credit in different topics with permission of the department. |
| MATH 580    | 1.5   | Topics in Pure Mathematics |
| MATH 581    | 1.5   | Directed Studies  
Directed studies may be available in the areas of faculty interest.  
Notes:  
• May be taken more than once for credit in different topics with permission of the department.  
• Pro Forma required. |
| MATH 585    | 0 or 1.5 | Seminar  
Notes:  
• May be taken only once for credit in any degree program.  
• The seminar leader will inform students of the requirements for credit before the seminar commences.  
An INP grade may be assigned. |
| MATH 586    | 0 or 1.5 | Operator Theory Seminar  
Notes:  
• May be taken only once for credit in any degree program.  
• The seminar leader will inform students of the requirements for credit before the seminar commences.  
Grading: INP, standard grade. |
MATH 587 - MBA 511

MATH 587  Units: 0 or 1.5
Applied Math Seminar

Notes:
- May be taken only once for credit in any degree program.
- The seminar leader will inform students of the requirements for credit before the seminar commences.

Grading: IP, standard grade.

MATH 588  Units: 1.5
Discrete Mathematics Seminar

Note: May be taken more than once for credit with permission of the department.

MATH 591E  Units: 1.5
Topics in Mathematics for Secondary Teachers

Intended for students enrolled in a master's program specializing in Mathematics Education but open to students enrolled in other master's programs in Education. One of the four topics: Geometry, Mathematical Modelling, Data Analysis, History and Philosophy of Mathematics will be taught in a given term. Topics will be rotated each term the course is offered.

Note: May be taken more than once for credit in different topics.

Prerequisite(s): 3 units of MATH courses numbered 300 or higher.

MATH 599  Units: 6.0
Master's Thesis

Grading: IP, COM, N, F.

MATH 693  Units: 3.0
Candidacy Examination

Grading: IP, COM, N, F.

MATH 699  Units: 21.0-30.0
Dissertation

Corequisite(s): MATH 693.

Grading: IP, COM, N, F.

MBA

Master of Business Administration
Peter B. Gustavson School of Business

PhD program in International Management and Organization is found under the BUS course code.

MBA 500  Units: 1.5-3.0
Essentials of Business and Leadership

An intensive course that constitutes the beginning of the MBA program. Provides students with a foundation on which to begin the study of business at an advanced level. Key areas of skill development include business writing, presenting, teambuilding, case analysis, cross-cultural communication and career development. Provides ethical frameworks for decision making and an exploration of issues relating to international business, sustainability and social responsibility.

Note: The unit value of a course section will be specified according to the program in which it is delivered.

MBA 501  Units: 0
Applied Projects

Client-based business projects that integrate program subject material, usually in the context of examining a particular industry or organization. Requires reports and/or presentations. Will focus, when possible, on the Gustavson School of Business value pillars: International, Integrative, Innovative, Sustainable/Socially Responsible. One of these projects takes place in an international setting.

Notes:
- Not open to students registered in or with credit in MBA 501A or MBA 501B.
- Attendance and participation are mandatory. Students are required to register in this course for the duration of the MBA Program.
- Students in a double-degree program or on international exchange will normally be waivered from the international project.

Grading: INP, COM, N, F.

MBA 501A  Units: 0
Integrative Management Exercise (IME)

One or more client-based business practice exercises which integrate program subject material, usually in the context of examining a particular industry or organization. Requires reports and/or presentations. Takes place on campus and will focus, when possible, on one or both of the International or Socially Responsible and Sustainable value pillars of the Gustavson School of Business.

Note: Registration is restricted to the Daytime MBA Cohort entering in summer session 2016. Attendance and participation are mandatory. Registration in MBA 501A is for the domestic, "on campus" IME.

Grading: INP, COM, N, F.

MBA 501B  Units: 0
International Integrative Management Exercise (IME)

A client-based business practice exercise which integrates program subject material, usually in the context of examining a particular industry or organization. Requires reports and/or presentations. Takes place in an international setting.

Note: Registration is restricted to the Daytime MBA Cohort entering in summer session 2016. Attendance and participation are mandatory. Registration in MBA 501B is for the international, "off campus" IME.

Grading: INP, COM, N, F.

MBA 502  Units: 0
Personal and Professional Development

A course of sessions/activities delivered throughout the MBA program providing practical knowledge and practice in areas vital for professional success in the business world. Content includes: career development, team-building, leadership development, and cross-cultural boundary spanning.

Note: Students are required to register in this course for the duration of the MBA Program.

Grading: INP, COM, N, F.

MBA 509  Units: 0.5-2.0
Managing in the Service Economy

Examines service issues from organization and human resources management, operations management and marketing perspectives to provide students an integrated view of designing and delivering a valuable, memorable customer experience. Topics include: building a service culture and strategy, managing the talent, service blueprinting, developing customer-oriented service standards, service design, creating the "servicescape", understanding consumer emotions and psychology, service failure and recovery, customer co-creation of value and service delivery networks.

Note: The unit value of a course section will be specified according to the program in which it is delivered.

MBA 510  Units: 0.5-1.5
Marketing Management

Controllable and uncontrollable marketing variables that managers face in today's business environment. Topics include factors affecting consumer demand (including issues of sustainability, environmental impact and ethical management) and methods of satisfying it, market structure, product selection, distribution, promotion, pricing and market research. Course structure, exercises, projects and case problems are designed to develop the students' ability to generate effective marketing strategies in the face of uncertainty.

Note: The unit value of a course section will be specified according to the program in which it is delivered.

MBA 511  Units: 0.5-1.5
Customer Experience Management

Intended for those students who are interested in working in service industries and addresses the distinct needs and problems of service organizations in the area of marketing. Topics include: the difference between marketing services versus manufacturing organizations; the marketing mix for service organizations; market research in services; managing demand in services; integrated services marketing communication; services pricing; and the overlap of marketing/operations/human resource systems in service organizations.

Note: Not open for students with credit in the Service Management Specialization courses previously offered under MBA 595. The unit value of a course section will be specified according to the program in which it is delivered.

Prerequisite(s): MBA 510

Corequisite(s): MBA 512 and MBA 513.
MBA 512 Units: 0.5-1.5
Quality Management and Service Operations
Focuses on managing and improving service firms across industries, including financial services, health care, hospitality, retail and professional service firms. Addresses the distinct needs and problems of service organizations in the areas of operations and quality management. A core theme is a quality management approach to providing service excellence. Topics include: service strategy, service design, service quality, process improvement, service capacity management, service innovation and technology, and sustainable and socially responsible practices in services.

Notes:
- Not open to students with credit in the Service Management Specialization courses previously offered under MBA 595.
- The unit value of a course section will be specified according to the program in which it is delivered.

Prerequisite(s): MBA 510
Corequisite(s): MBA 511 and MBA 513

MBA 513 Units: 0.5-1.5
Issues in Service Technology and HR Management
Addresses the distinct needs and problems of service organizations in the areas of human resource management and IT management. Topics include: e-service and the role of technology; customer relationship management (CRM); managing the organizational culture; impact of cultural differences on customer service; management and motivation of knowledge workers; self-service technology; the service profit chain; and sustainable and socially responsible practices in human resource management.

Notes:
- Not open to students with credit in the Service Management Specialization courses previously offered under MBA 595.
- The unit value of a course section will be specified according to the program in which it is delivered.

Corequisite(s): MBA 511 and MBA 512

MBA 514 Units: 0.5-1.5
Business and Sustainability
An introduction to the business challenges and opportunities arising from the world’s growing social and ecological issues, including climate change, poverty and corporate corruption. Students are exposed to how companies across multiple sectors have chosen to respond - or not respond - to the call for sustainable social, ecological and economic value creation. Relevant tools and frameworks are introduced, including stakeholder management/engagement, triple-bottom line, Natural Step, base-of-the-pyramid strategies and social entrepreneurship.

Notes:
- Credit will be granted for only one of MBA 514, MBA 580, MBA 595 (if taken in the same topic).
- The unit value of a course section will be specified according to the program in which it is delivered.

MBA 515 Units: 0.5-1.5
Applied Managerial Economics
Applies economic principles to the analysis of corporate problems. Topics include product, risk and business opportunity analysis, production costs and profit maximization, the determination of prices and output under different market structures, investment decisions, and economic forecasting.

Note: The unit value of a course section will be specified according to the program in which it is delivered.

MBA 520 Units: 0.5-1.5
Financial and Managerial Accounting
Focuses on two broad areas to improve understanding of the use of accounting information in management decision making: 1) Financial Reporting including examination of corporate financial reports, International Financial Accounting Standards, triple-bottom line reporting, and governance and 2) Managerial Accounting including the nature, analysis of costs, product costs, and control systems.

Note: The unit value of a course section will be specified according to the program in which it is delivered.

MBA 521 Units: 1.5
Also: COM 410
Leadership Strategies
An examination of leadership in a variety of environments: corporate, the military, and the public sector. Identifies the characteristics of a leader and instills an interest in and awareness of this vital organizational skill. Includes a review of leadership research from a historical perspective as well as current theory on transformational leadership. Experiential exercises, case studies and role playing techniques are employed to demonstrate leadership skills.

Note: Credit will be granted for only one of MBA 521, COM 410.
Prerequisite(s): Permission of the program.

MBA 524 Units: 1.5
Also: COM 445
Corporate Finance
Serves as a continuation of the introductory finance course to more advanced applications of the techniques, concepts, and tools of corporate finance. Main topics include short- and long-term financial management, cost of capital, capital structure, financial leverage, dividends policy, working capital management, leasing, mergers and acquisitions, and the use of derivatives for risk management.

Note: Credit will be granted for only one of MBA 524, COM 445.
Prerequisite(s): Permission of the program.

MBA 525 Units: 1.5
Also: COM 446
Investments
Covers the fundamental principles that are crucial to understanding the securities traded in international financial markets. The main topics include market structure, information efficiency, asset pricing models, valuation and trading of stocks, bonds, options and futures.

Note: Credit will be granted for only one of MBA 525, COM 446, COM 450 (if taken in the same topic), ECON 435.
Prerequisite(s): Permission of the program.

MBA 528 Units: 0.5-1.5
International Logistics and Supply Chain Management
Examines the issues involved in managing global supply chains and logistics flows. Topics are developed around the risks and opportunities of global sourcing. Topics include some of the following: designing and implementing global supply chains, foreign manufacturing, inventory management, coping with security concerns, outsourcing, service standards, transportation options and performance evaluation.

Notes:
- Credit will be granted for only one of MBA 528, MGB 519.
- The unit value of a course section will be specified according to the program in which it is delivered.

MBA 530 Units: 0.5-1.5
Managerial Finance
Provides a framework, concepts, and tools for analyzing financial decisions. Topics include discounted cash flow techniques, valuation of financial assets, financial statement analysis, capital budgeting decisions, risk and return tradeoffs, diversification and portfolio theory, capital market efficiency, and the cost of capital to the firm. Focuses on management-shareholder agency problems, ethical issues in financial decision-making, and issues related to sustainability and corporate social responsibility (CSR) in project valuation and portfolio investments.

Note: The unit value of a course section will be specified according to the program in which it is delivered.

MBA 531 Units: 1.5
Also: COM 425
Taxation for Managers
Reviews the fundamentals of the income tax system for all taxpayers. It then examines tax planning techniques that maximize cash flow and return on investment. While the course emphasizes business decisions, it also includes personal financial planning issues.

Note: Credit will be granted for only one of MBA 531, COM 425.
Prerequisite(s): Permission of the program.

MBA 535 Units: 0.5-1.5
Operations Management
An introduction to the concepts for managing the systems organizations use for producing goods and services. Topics include some of the following: operations strategy, capacity and technology planning, purchasing and materials management, workflow planning, scheduling, and quality management and control.

Note: The unit value of a course section will be specified according to the program in which it is delivered.

MBA 540 Units: 0.5-1.5
Applied Data Analysis and Decision Analysis
A decision-oriented course that focuses on the frameworks, concepts, theories and principles needed to organize and use information to make informed business decisions. Cases, exercises, discussion questions and other pedagogical tools are used to help participants build data gathering and analysis skills. Topics include collecting, summarizing, organizing and extracting data, probability theory and risk in decision making, and One-Way Analysis of Variance and Regression Analysis.

Note: The unit value of a course section will be specified according to the program in which it is delivered.
MBA 544 - Units: 0.5-1.5
**Information Technology in the Organization**
An introduction to the capabilities and utilization of information technology (IT), information systems (IS) and networks. Different approaches using IT and IS will be covered to provide an understanding of how they can be used effectively in today's internetworked enterprise. Cases and assignments will be utilized to explore the evolving role of IS and networks in today's interconnected organization both within and external to it.

**Note:** The unit value of a course section will be specified according to the program in which it is delivered.

MBA 546 - Units: 0.5-2.0
**Innovation and Design Studio**
Explores innovation via a studio approach in which students learn through practice and reflection. Topics include framing the ‘problem space’ through deep understanding of users and context, and techniques for eliciting creative ideas, such as structured brainstorming and rapid prototyping, to explore the ‘solution space’. Students become integrative, creative problem solvers who combine rigorous research with narrative, visual data and other knowledge forms to generate original, practical strategies.

**Note:** The unit value of a course section will be specified according to the program in which it is delivered.

MBA 550 - Units: 0.5-1.5
**Strategic Analysis and Action**
Introduces the integrative nature of management. Explores the overall general management of the organization, and the formulation and implementation of the strategic direction of the firm. Covers major strategic management concepts including analyses of external and internal environments, innovation, corporate social responsibility (CSR), managerial ethics, value co-creation, and leadership, as they relate to business strategy. Intended to develop an appreciation of the role of a general manager from conceptual as well as pragmatic standpoints.

**Note:** The unit value of a course section will be specified according to the program in which it is delivered.

MBA 552 - Units: 0.5-2.0
**Collaboration in Organizations**
Explores ways to lead and cultivate collaboration in both inter- and intra-organizational contexts. Topics may include identifying what effective collaboration looks like, when collaboration does (and doesn’t) make sense, organizational barriers to collaboration, the skills required to encourage others to collaborate effectively, and the characteristics of collaborative leadership.

**Note:** The unit value of a course section will be specified according to the program in which it is delivered.

MBA 553 - Units: 0.5-1.5
**Managing People and Organizations I**
Examines the behaviour of individuals, groups and organizations from an organizational design perspective. Topics include: the analysis of goals, environment structure and growth; teams, organizational culture, power, politics and conflict management; decision making, motivation, trust, and leadership.

**Note:** The unit value of a course section will be specified according to the program in which it is delivered.

MBA 555 - Units: 0.5-1.5
**Managing People and Organizations II**
Examines the issues in managing employees in organizations. Topics include recruitment and hiring, retention practices, performance review, compensation design, layoffs and selected employment and human rights legislation.

**Note:** The unit value of a course section will be specified according to the program in which it is delivered.

MBA 560 - Units: 0.5-1.5
**Managing Legal Risks**
Examines various legal risks (whether arising from the common law or through legislation) that must be identified and effectively managed within contemporary organizations (including for-profit businesses, not-for-profit and governmental organizations). Examines the legal risks associated with the manufacture, delivery and marketing of goods and services, the creation and protection of confidential information and other intellectual property, and risks arising from employment and contractor relationships. Also reviews risk management strategies available under the law of tort and contract.

**Note:** The unit value of a course section will be specified according to the program in which it is delivered.

MBA 561 - Units: 0.5-1.5
**Entrepreneurial Planning and Finance**
Part of the integrated MBA Entrepreneurship module, focuses on differences between ideas and opportunities, identifying necessary information to screen and analyze the risks attached to shaping opportunities into viable businesses; understanding financial data and use of quantifiable factors in the entrepreneurial decision process. Students understand essential elements of a business plan, the catalyst for skill development of entrepreneurial new venture ideas.

**Notes:**
- Not open to students with credit in the Service Management Specialization courses previously offered under MBA 595.
- The unit value of a course section will be specified according to the program in which it is delivered.

MBA 562 - Units: 0.5-1.5
**New Venture Marketing**
Part of the integrated MBA Entrepreneurship program, develops the thinking skills required to: develop valued products, understand customers and markets, and gain market acceptance with limited resources.

**Notes:**
- Not open to students with credit in the Service Management Specialization courses previously offered under MBA 595.
- The unit value of a course section will be specified according to the program in which it is delivered.

MBA 563 - Units: 0.5-1.5
**Entrepreneurial Strategy**
Part of the integrated MBA Entrepreneurship program, develops skills necessary to plan a venture’s strategy, business model and competitive position, to assess a strategy’s viability, and to develop implementation plans to realize that strategy. Models for international and social entrepreneurship and venture growth will also be discussed.

**Notes:**
- Not open to students with credit in the Service Management Specialization courses previously offered under MBA 595.
- The unit value of a course section will be specified according to the program in which it is delivered.

MBA 564 - Units: 0.5-2.0
**Entrepreneurship**
Entrepreneurship is about new value creation in new for-profit ventures, social enterprises, existing corporations, government, and other contexts. Takes prospective entrepreneurs through the opportunity (value) identification and realization process with a focus on developing entrepreneurial expertise and an entrepreneurial mindset. Learners will apply key theory, frameworks, concepts, and tools towards their own entrepreneurial pursuit with the aim of getting to the proof-of-concept stage of development with a lean business plan.

**Note:** The unit value of a course section will be specified according to the program in which it is delivered.

MBA 570 - Units: 0.5-2.0
**International Business Environment I**
Overview of international business and management, emphasizing globalization and its implications for individuals, organizations and nations. Explores topics in global and regional economic integration, sources of national competitive advantage, international trade and investment, corporate social responsibility (CSR) in international contexts, strategy and organization in multinational enterprises, emerging markets, and current issues related to the international business environment. Students will develop a world-view of today’s dynamic global marketplace and analytical skills for addressing complex global issues.

**Note:** The unit value of a course section will be specified according to the program in which it is delivered.

MBA 576 - Units: 0.5-2.0
**International Business Environment II**
This course is a continuation of topics covered in IB Environment I. Students will develop a world-view of today’s dynamic global marketplace and analytical skills for addressing complex global issues.

**Note:** The unit value of a course section will be specified according to the program in which it is delivered.

MBA 585 - Units: 0.5-1.5
**Consulting Methods I**
Provides an overview of management consulting to help students gain an understanding of management consulting skills and competencies. These consulting skills can be used in the pursuit of a consulting career or integrated as part of general management knowledge. Designed to prepare students for S01 Applied Projects and S96 Integrative Project.

**Note:** The unit value of a course section will be specified according to the program in which it is delivered.
MBME

Master of Business Administration + Master of Engineering

MBA Program and Faculty of Engineering

Sardul S. Gill Graduate School of Business

Specifically for the MBA+MEng Double Degree Program which is jointly offered by the Sardul S. Gill Graduate School of Business and the Faculty of Engineering.

Other courses offered by the MBA Program are found under the following course code: MBA. Other courses offered by the MEng Programs are found under the following course codes: ECE and MECH.

MBME 598 Units: 3.0

Major Project

A substantial analysis of a specific issue related to both management and engineering contexts, prepared individually under the supervision of faculty advisers from both the Gustavson School of Business and the Faculty of Engineering.

Note: Students, in consultation with their academic advisor, should determine if they have an adequate background in research methodology prior to enrolling in MBME 598. This may require the student to take a research methods course. Students should consult with their academic advisor to identify an appropriate course.

Grading: INP, COM, N, F.

MBMS

Master of Business Administration + Master of Science (CSC)

MBA Program and Faculty of Engineering

Sardul S. Gill Graduate School of Business

Specifically for the MBA+MSc in Computer Science Double Degree Program which is jointly offered by the Sardul S. Gill Graduate School of Business and the Faculty of Engineering.

Other courses offered by the MBA Program are found under the following course code: MBA. Other courses for the MSc in Computer Science component of the program are found under the following course code: CSC.

MBMS 598 Units: 3.0

Major Project

A substantial analysis of a specific issue related to both management and computer science, prepared individually under the supervision of faculty advisers from both the Gustavson School of Business and the Department of Computer Science.

Note: Students, in consultation with their academic advisor, should determine if they have an adequate background in research methodology prior to enrolling in MBMS 598. This may require the student to take a research methods course. Students should consult with their academic advisor to identify an appropriate course.

Grading: INP, COM, N, F.

MECH

Mechanical Engineering

Department of Mechanical Engineering

Faculty of Engineering

MECH 501 Units: 1.5

Introduction to Continuum Mechanics


MECH 504 Units: 1.5

Mechanical Vibration

Multi Degree of Freedom systems: equation of motion in matrix form, modal analysis, transfer function, damped and undamped response to arbitrary excitations. Linear continuous systems: transverse vibrations of strings, lateral beam vibrations, axial and torsional vibration of rods. Random vibration; stationary random processes, correlation functions, Fourier analysis, power spectral density, random response of SDOF systems. Vibration measurement and Experimental Modal Analysis. Introduction to non-linear vibrations; approximate analytical solutions, graphical methods, stability of equilibrium states.

MECH 510 Units: 1.5

Living Cells and their Molecules: Mechanics & Thermodynamics


Note: Credit will be granted for only one of MECH 510, MECH 580 (if taken in the same topic).

MECH 515 Units: 1.5

Biomaterials and Tissue Engineering

Introduction to the types of biomaterials and their associated properties. Experimental characterization techniques including microscopy, detection of chemical compositions, protein adsorption and immunoreactivity. Methods for combining biomaterials with cells to engineer tissues.

Note: Credit will be granted for only one of MECH 515, MECH 580 (if taken in the same topic).

MECH 520 Units: 1.5

Computer-Aided Design and Engineering

Fundamentals of computer graphics; basic elements of geometric modeling of solids and curved surfaces; advanced topics in engineering drawings; use of integrated CAD/CAE/CAM system for modelling, simulation, engineering analysis, automated production, and parameter optimization of mechanical designs; input and output techniques, data management, and customization of CAD/CAE/CAM systems.

Note: There is a 3-hour laboratory requirement on alternate weeks.
MECH 521  Units: 1.5  
Computer-Aided Manufacturing (CAM)  
Introduction to machining operations features of numerically controlled machine tools and types of CNC programming. Manual part programming with G-codes, canned cycles, subprograms, and simulation program. CNC machine tools and control and machine tool kinematics. CNC machining of curved surfaces, and surface machining strategies. Rapid prototyping or 3D printing. Machining mechanics and dynamics.  
Note: There is a 3-hour laboratory requirement on alternate weeks.

MECH 523  Units: 1.5  
Modeling and Design of Advanced Hybrid Electric Vehicles  
Background of Hybrid Electric Vehicle (HEV) powertrain technologies; vehicle power plants, electric propulsion systems, transmissions, and energy storage vehicle; vehicle performance modeling and simulation using advanced powertrain modeling tools; design and optimization of HEV powertrain system; other key issues in HEV design and developments; HEV related research and case study.  
Note: Credit will be granted for only one of MECH 523, MECH 580 (if taken in the same topic).

MECH 528  Units: 1.5  
Global Optimization and Quantitative Reasoning Techniques  
Review of conventional engineering optimization methods, global optimization algorithms, introduction of metamodelling and metamodel-based global optimization techniques, multi-objective and multi-disciplinary optimizations; knowledge representation and reasoning, rule-based systems, fuzzy pattern clustering and recognition, and artificial neural networks; applications of metamodel-based global optimization and quantitative reasoning for computational design and optimal control.  
Note: Credit will be granted for only one of MECH 528, MECH 620.

MECH 531  Units: 1.5  
Fluid Mechanics  

MECH 535  Units: 1.5  
Computational Fluid Dynamics and Heat Transfer  

MECH 536  Units: 1.5  
Microfluidics  

MECH 537  Units: 1.5  
Non-equilibrium Thermodynamics and Kinetic Theory of Gases  
Conservation and balance laws, properties and property relations, 2nd law and interpretation of entropy, entropy generation and work loss, classical irreversible thermodynamics, cross effects and Onsager conditions. Kinetic theory of gases: Distribution function, Boltzmann equation, conservation laws, H-Theorem, continuum limit; the laws of Navier-Stokes and Fourier, higher order methods and moment equations, Knudsen layers, rarefaction effects.

MECH 538  Units: 1.5  
Advanced Aircraft Design  
Note: Credit will be granted for only one of MECH 538, MECH 580 (if taken in the same topic).

MECH 540  Units: 1.5  
Transport Phenomena  
Fundamentals of thermomechanics; kinematics, motion, stress, thermodynamics, fundamental principles of thermomechanics. Constitutive equations; basic principles and axioms, linearization of constitutive equations, constitutive equations of special materials such as Newtonian fluids and binary mixtures. Field equations for binary fluid mixtures. Mass transport; diffusivity and mechanisms of mass transport, examples of concentration distributions in binary solids and fluids (laminar flow), examples from ternary systems.

MECH 541  Units: 1.5  
Advanced Thermodynamics  

MECH 542  Units: 1.5  
Energy Systems and Energy Analysis  
Macroscopic examination of energy systems, system architecture and evolution. Dynamics of energy systems. Characteristics and impacts of energy storage. Exergy balance and second law efficiency.

MECH 543  Units: 1.5  
Cryogenic Engineering  

MECH 546  Units: 1.5  
Introduction to Ocean Engineering  
Note: Credit will be granted for only one of MECH 546, MECH 580 (if taken in the same topic).

MECH 547  Units: 1.5  
Wind Power Systems  
Note: Credit will be granted for only one of MECH 547, MECH 580 (if taken in the same topic).

MECH 549  Units: 1.5  
Fuel Cell Technology  

MECH 550  Units: 1.5  
Advanced Control Theory  

MECH 554  Units: 1.5  
Mechatronics  
Introduction to mechatronic systems; modeling of mixed mechatronic systems; microcontroller programming and interfacing; theory, selection and implementation of sensors and actuators commonly used in mechatronic systems; control architectures and case studies in mechatronics systems.  
Note: Credit will be granted for only one of MECH 554, MECH 580 (if taken in the same topic).
### MECH 555 - Micro-ElectroMechanical Systems

**Units:** 1.5  
**Principles of Micro-ElectroMechanical Systems (MEMS).**  
Covers design and fabrication. Topics include: scaling laws, micro-mechanical structures for micro-sensing and micro-actuation, electrostatic devices, micro-thermal devices, piezoresistive devices, piezoelectric devices, micro-magnetic devices, micro-fluidics, micro-optics, microassembly and packaging. Case studies of actual MEMS devices, their operation and their micro-fabrication are discussed.  

### MECH 558 - Fundamentals of Hybrid Vehicles

**Units:** 1.5  
**Background of hybrid electric vehicle (HEV) powertrain technologies; vehicle power plants, electric propulsion systems, transmissions, and energy storage systems; vehicle performance modeling and simulation using advanced powertrain modeling tools; design and optimization of HEV powertrain systems; other key issues in HEV design and development; HEV related design project and case study.**

**Note:** Credit will be granted for only one of MECH 558, MECH 580 (if taken in the same topic).

### MECH 563 - Finite Element Analysis

**Units:** 1.5  
**Introduction to the basic principles of finite element analysis. Development of discrete equations for problems of 1, 2, and 3D elasticity. Application to problems of stress analysis, vibrations, heat transfer and fluid flow. Includes a number of projects encouraging students to use large-size finite element analysis programs. Should be of interest to mechanical and electrical engineers, as well as students from the departments of Computer Science and Mathematics.**

### MECH 573 - Ferrous and Non-Ferrous Metals

**Units:** 1.5  
**The iron-carbon and iron-cementite phase diagrams; nucleation and growth of microstructural constituents; the martensite phase transformation; time-temperature-transformation (TTT) curves; properties affected by quenching, tempering and annealing; alloy additions; structural, high strength and specialty steels; welding; tool and stainless steels; cast irons; super alloys; metal matrix composites.**

### MECH 576 - Introduction to Electron Microscopy

**Units:** 1.5  
**Introduction to Scanning Electron Microscopes, Transmission Electron Microscopes and associated methods of microscopy; phase contrast imaging, diffraction contrast imaging, Z-contrast imaging and analytical electron microscope; methods for producing microscopy specimens.**

**Note:** Credit will be granted for only one of MECH 576, MECH 580 (if taken in the same topic).

### MECH 580 - Selected Topics in Mechanical Engineering

**Units:** 1.5  
**A wide range of topics will be available.**

**Note:** May be taken more than once for credit in different topics.

### MECH 590 - Directed Studies

**Units:** 1.5  
**A wide range of topics will be available.**

**Note:** Pro Forma required.

### MECH 594 - Seminar

**Units:** 1.0  
**Participation in a program of seminars by internal and external speakers on current research topics. MEng students are not required to present.**

**Prerequisite(s):** Admission to MEng program in Mechanical Engineering.

**Grading:** INP, COM, N.F.

### MECH 595 - Seminar

**Units:** 1.5  
**Participation in a program of seminars by internal and external speakers on current research topics. All MASc students will be required to give a seminar on their thesis research during the second year of the program.**

**Prerequisite(s):** Admission to MASc program in Mechanical Engineering.

**Grading:** INP, COM, N.F.

### MECH 598 - MEng Project Report

**Units:** 3.0  
**Grading:** INP, COM, N.F.

### MECH 599 - MASc Thesis

**Units:** 9.0  
**Grading:** INP, COM, N.F.

### MECH 601 - Engineering Analysis

**Units:** 1.5  
**Introduction to mathematical methods used in engineering analyses with focus on the application to engineering problems rather than the rigorous proofs of mathematical concepts. Topics can include: integral transformations including Laplace and Fourier transforms, complex analysis including analytic functions, theory of residues and conformal mapping; calculus of variations applied to optimal control, finite element methods and wave equations; linear algebra including least squares problems, eigenproblems and matrix decompositions.**

**Note:** Credit will be granted for only one of MECH 601, MECH 580 (if taken in the same topic).

### MECH 693 - Candidacy Examination

**Units:** 3.0  
**PhD students enrol in 693 for the duration of their preparation for the candidacy examination. This begins at the time the PhD student first enrols in the PhD program and continues until the candidacy examination has been completed.**

**Pre- or Corequisite(s):** MECH 501 or MECH 601.

**Grading:** INP, COM, N.F.

### MECH 695 - Seminar

**Units:** 1.5  
**Participation in a program of seminars by internal and external speakers on current research topics. Normally, all PhD students are required to give two seminars on their thesis research within 16 months and 34 months of registration.**

**Prerequisite(s):** Admission to a doctoral program in Mechanical Engineering.

**Grading:** INP, COM, N.F.

### MECH 699 - PhD Dissertation

**Units:** 27.0  
**Grading:** INP, COM, N.F.
MGB 512  
International Financial Management  
An examination of international financial markets and the financial decision making of multinational firms. Topics include international monetary systems, exchange rate determination, foreign currency derivatives, risk management techniques, and investments, financing and operations in global markets.  
Note: Credit will be granted for only one of MGB 512, MBA 571.

MGB 516  
International Marketing and Global Strategy  
An examination of the strategic challenges facing businesses in an international context, with a focus on marketing issues. Topics include controlling and coordinating activities in multiple markets, managing diverse markets, responding to consumer and competitor differences, understanding the impact of different institutional structures, and coping with market consolidation.  
Note: Credit will be granted for only one of MGB 516, MBA 572.

MGB 519  
International Logistics and Supply Chain Management  
Examines the issues involved in managing global supply chains and logistic flows. Topics are developed around the risks and opportunities of global sourcing. They include designing and implementing global supply chains, foreign manufacturing, inventory management, coping with security concerns, outsourcing, service standards, transportation options and performance evaluation.  
Note: Credit will be granted for only one of MGB 519, MBA 529.

MGB 520  
The Asian Business Context  
An overview of business operations in the Asian context in various industry sectors. Also examines socio-economic, cultural and legal factors that impact doing business in Asia and that impact Asian firms doing business in regional and global settings.

MGB 525  
Developing Business in International Entrepreneurial Environments  
Examines the analyses and knowledge needed for successful new global business ventures as well as within an international environment. Emphasis will be given to the various stages in the development of a business plan, from idea development to presentation of the plan.

MGB 530  
The European Business Context  
An overview of corporate governance structures, legal and economic systems and environmental sustainability issues in the European Union and beyond. Prepares students to apply their knowledge and global perspective to solving business issues and challenges.

MGB 535  
Consulting Methods and Practice  
Provides an overview of the process of management consulting, introduces students to consulting methods to help them gain knowledge of consulting and to highlight specific consulting and research skills. To practice the application of these methodologies, student teams will examine an issue or problem being faced by their assigned overseas organizations, and provide them with consulting advice. In addition, this course will ultimately prepare students for the MGB 536 International Research and Consulting Project.

MGB 536  
International Research and Consulting Project  
An individual or group consulting report. Participating students, working individually or in small teams and under faculty supervision, research issues and maintain a consulting/client relationship with a corporate sponsor. The students examine a problem of current interest to the sponsor and prepare detailed written recommendations, make in-person presentations to clients and submit a final report.

MGB 537  
Global Internship  
Students must complete at least 300 hours of work with an organization that normally (1) has an international component linking two or more regions, or (2) is located in any region of the world, provided that it is not the student’s “home” region or country. Requires students to apply their learning through a reflective component that describes how the coursework and the internship experience in particular have prepared them for global business related careers.  
Note: Students who fail to complete an internship by the end of four academic terms may be required to withdraw.  
Prerequisite(s):  
- MGB 502; or  
- permission of the school.  
Grading: INP, COM, N, F.

MGB 540  
The South American Business Context  
An overview of business operations in the South American context in various industry sectors. Also examines socio-economic, cultural and legal factors that impact doing business in South America and that impact South American firms doing business in regional and global settings.

MGB 550  
The Middle East and North Africa (MENA) Business Context  
An overview of business operations in the MENA context in various industry sectors. Also examines socio-economic, cultural and legal factors that impact doing business in the MENA region and that impact MENA region firms doing business in regional and global settings.

MGB 560  
The Sub-Saharan African Business Context  
An overview of business operations in the sub-Saharan context in various industry sectors. Also examines socio-economic, cultural and legal factors that impact doing business in the region and that impact sub-Saharan African firms doing business in regional and global settings.

MGB 570  
Global Leadership and Cultural Intelligence  
An examination of the various dimensions of culture and cross-cultural leadership and management. Topics include how cultural intelligence and global mindset impact teamwork, conflict management, negotiations, motivation and overall leadership in international settings. Compares how people from the three regions of the MGB program modules (e.g., North America, Asia and Europe) are similar and how they differ along these dimensions, including the challenges resulting from these differences and how to resolve them.

MGB 583  
Language, Communication and Global Business  
Provides a framework - in conjunction with students’ language courses - to explore relationships among language, communication, and culture, a subject highly relevant to global companies. Considers the process of language interaction in global organizations and shows how foreign language learning adds value to businesses and careers. Also examines example global companies that have shaped their language policies (often towards using English as the lingua franca), impacting individual and organizational performance.  
Pre- or Corequisite(s): MGB 180.

MGB 595  
Special Topics in Global Business  
Note: May be taken more than once for credit in different topics with Permission of the Academic Program Director to a maximum of 6.0 units.  
Prerequisite(s): Permission from the Academic Program Director.

MICR  
Microbiology  
Department of Biochemistry and Microbiology  
Faculty of Science  

MICR 570  
Directed Studies in Microbiology  
Topics are restricted to an analysis of recent advances. The student’s graduate supervisor will not normally participate in directed studies taken for more than one unit of credit.  
Notes:  
- May be taken more than once for credit in different topics.  
- Pro Forma required.

MICR 599  
MSc Thesis: Microbiology  
Grading: INP, COM, N, F.

MICR 699  
PhD Dissertation: Microbiology  
Corequisite(s): BCMB 693.  
Grading: INP, COM, N, F.
**MRNE**

**Marine Science**  
Department of Biology  
Faculty of Science

**MRNE 500**  
Units: 1.0-6.0  
Directed Studies  
Note: Pro Forma required.

**MRNE 501**  
Units: 1.5 or 3.0  
Special Topics

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**MUS**

**Music**  
School of Music  
Faculty of Fine Arts

**MUS 500**  
Units: 1.5  
Selected Problems in Theory and Analysis  
Note: May be taken more than once for credit with permission of the school.

**MUS 501**  
Units: 1.5  
Seminar in Musical Notations

**MUS 502**  
Units: 1.5  
Musical Aesthetics and the Theory of Criticism

**MUS 503**  
Units: 1.5  
Introduction to Graduate Study and Music Bibliography  
Note: All students in musicology must register for this course in their first term of graduate study.

**MUS 504**  
Units: 1.5  
Seminar in Performance Practices  
Note: May be taken more than once for credit with permission of the school.

**MUS 506A**  
Units: 1.5  
Advanced Recording Techniques  
Advanced study to the theory and practice of recording audio technology, studio techniques and procedures. Study to include: advanced stereo microphone techniques, introduction to surround sound, high resolution formats including SACD, DVD-A, DSD, electroacoustic measurements and multi-track recording and theory. Practical work includes recording sessions, mixing and producing.

**MUS 506B**  
Units: 1.5  
Sound Recording Seminar  
Advanced study of sound recording and music production techniques using the production of a full length CD or DVD as a model. Topics will include techniques in audio post-production and editing with advanced equipment, music production, location recording, and readings of current research and technical papers. Requires the completion of a full length CD or DVD project.  
Prerequisite(s):  
- MUS 506A; or  
- permission of the school.

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**MUS 507**  
Units: 3.0  
Computer Music Seminar

**MUS 508**  
Units: 1.5  
Musical Acoustics  
The physics of musical sound and the acoustics of musical instruments. Timbre, scales, tuning and temperament. An introduction to psychoacoustical issues.  
Note: Credit will be granted for only one of MUS 508, MUS 506.

**MUS 510**  
Units: 1.5  
Computational Music and Audio Analysis  
An in-depth examination of the approaches to the analysis of audio signals, computational modeling, and synthesis of musical signals, with a focus on creative applications.

**MUS 511**  
Units: 1.5  
Music Perception and Cognition  
The examination of music as a human cognitive domain: the physiological, sensory and organizational processes involved in the perception and cognition of musical sound.

**MUS 512**  
Units: 1.5  
Music Technology Colloquium  
Provides a forum for guest scholars and professionals, faculty members and students to present and discuss their research. Candidates for the MMus in Music Technology select their comprehensive examination field topics and develop their project proposals.

**MUS 530**  
Units: 1.5  
Topics in Musicology Before 1750  
Note: May be taken more than once for credit in different topics.

**MUS 531**  
Units: 1.5  
Topics in Musicology After 1750  
Note: May be taken more than once for credit in different topics.

**MUS 532**  
Units: 1.5  
Comparative Topics in Musicology  
Note: May be taken more than once for credit in different topics.

**MUS 533**  
Units: 1.5  
Graduate Forum in Musicology  
Develops skills in professional activities in the field of musicology, including delivering an in-house conference paper, serving as a respondent to a peer paper, and editing or publishing an article in Musical Explanations. Provides a forum for Major program requirements leading up to the first year review.

**MUS 534**  
Units: 1.5  
Advanced Research Forum in Musicology  
Core seminar in advanced research skills for second-year degree candidates in Musicology that provides an interactive forum for completion of major program requirements. Students conduct research in diverse areas of inquiry in musicology and gain professional experience through the preparation of a conference presentation. Candidates for the MA complete their Comprehensive Examinations and a formal Thesis Proposal, while PhD candidates complete their formal proposal for the Comprehensive Examinations in the context of the Forum.  
Prerequisite(s): MUS 533.  
Grading: INC, COM, N, F.

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**MUS 540**  
Units: 0.5 or 1.0  
Individual Tuition  
Lessons in instrument or voice.  
Note: May be taken more than once for credit with permission of the school.  
Prerequisite(s): Permission of the school.

**MUS 545**  
Units: 4.0  
Major Instrument Study  
Individual tuition, integrated performance seminar and master class.  
Note: May be taken more than once for credit with permission of the school.  
Prerequisite(s): Admission to MMus in Performance.

**MUS 545Q**  
Units: 4.0  
Major Instrument Study  
For students in Master of Music (MMus) in Performance-Emphasis in String Quartet program.  
Notes:  
- May be taken more than once for credit with permission of the school.  
- MUS 545Q must be taken in each year of the program.

**MUS 555**  
Units: 3.0  
Individual Tuition in Composition  
Note: May be taken more than once for credit with permission of the school.

**MUS 561**  
Units: 1.5  
Seminar in Composition  
Seminar in Composition, taken each year.  
Notes:  
- May be taken more than once for credit.  
- A combined undergraduate and graduate course (MUS 462A Undergraduate Seminar in Performance of New Music).

**MUS 562A**  
Units: 1.5  
Seminar in Performance of New Music  
This seminar/workshop provides intensive professional training for performers who work together with composers in the creation, performance, and production of new music. Graduate performers will prepare new works composed specifically for them by the composers registered simultaneously in 562B. Training in contemporary notation and performance practices, extended techniques, instrumentation, analysis, conducting techniques, communication skills, and concert production. The final project will be a festival.  
Note: A combined undergraduate and graduate course (MUS 462A Undergraduate Seminar in Contemporary Composition and Performance).

**MUS 562B**  
Units: 1.5  
Seminar in Contemporary Composition and Performance  
This seminar/workshop provides intensive professional training for composers who work together with performers in the creation and production of new music. Composers will create new works designed for small mixed ensembles of performers registered simultaneously in 562A, and work with them to prepare the works for performance. Training in contemporary notation and performance practices, analysis, instrumentation, communication skills, and concert production. The final project will be a festival.
MUS 580A - NRSC 501A

MUS 580A  Units: 2.0  
Formerly: part of MUS 580  
University Orchestra  
Rehearses and performs orchestral repertoire from the Baroque to the present.  
Notes:  
• Credit will be granted for only one of MUS 580A, MUS 580.  
• May be taken more than once for credit.  
• Open to all students by audition.

MUS 580B  Units: 2.0  
Formerly: part of MUS 580  
University Symphony  
Rehearses and performs orchestral repertoire for the winds, brass and percussion.  
Notes:  
• Credit will be granted for only one of MUS 580B, MUS 580.  
• May be taken more than once for credit.  
• Open to all students by audition.

MUS 580C  Units: 2.0  
Formerly: part of MUS 580  
Don Wright Symphonic Winds  
Rehearses and performs intermediate level repertoire for winds, brass and percussion.  
Notes:  
• Credit will be granted for only one of MUS 580C, MUS 580.  
• May be taken more than once for credit.  
• Open to all students.

MUS 580D  Units: 2.0  
Formerly: part of MUS 580  
Jazz Ensemble  
Rehearses and performs a wide range of works, both old and new, for jazz ensemble.  
Notes:  
• Credit will be granted for only one of MUS 580D, MUS 580.  
• May be taken more than once for credit.  
• Open to all students by audition.

MUS 580E  Units: 2.0  
Formerly: part of MUS 580  
University Chorus  
A large SATB choral ensemble that rehearses and performs repertoire for mixed choir, and choral and orchestral works.  
Notes:  
• Credit will be granted for only one of MUS 580E, MUS 580.  
• May be taken more than once for credit.  
• Open to all students.

MUS 580F  Units: 2.0  
Formerly: part of MUS 580  
Chamber Singers  
A select SATB choral ensemble performing both standard and lesser-known choral repertoire from a wide spectrum of composers and styles.  
Notes:  
• Credit will be granted for only one of MUS 580F, MUS 580.  
• May be taken more than once for credit.  
• Open to all students by audition.  
• Previous choral experience and strong music skills are required.

MUS 580G  Units: 2.0  
Formerly: part of MUS 580  
University Women's Choir  
A choral ensemble that rehearses and performs varied repertoire for women's voices.  
Notes:  
• Credit will be granted for only one of MUS 580G, MUS 580.  
• May be taken more than once for credit.  
• Open to all students by audition.

MUS 580H  Units: 2.0  
Pacific Opera Victoria Chorus  
Rehearses and performs operatic repertoire as part of the Pacific Opera Victoria professional season.  
Notes:  
• Credit will be granted for only one of MUS 580H, MUS 580.  
• May be taken more than once for credit.  
• Open to all students by audition.

MUS 581  Units: 1.0  
Chamber Music  
MMus candidates in Performance will normally register for both this course and 580 in each year of study. MA candidates in Musicology (with Performance) will normally select one of 580 or 581 each year, as determined in consultation with the supervisor.

MUS 588  Units: 1.0  
MMus Practicum  
Recital for performance candidates normally taken in first year.  
Grading: INP, COM, N, F.

MUS 590  Units: 1.5 or 3.0  
Directed Studies  
Note: May be taken more than once for credit with permission of the school.

MUS 596  Units: 1.5  
Lecture-Recital  
A lecture-recital of substantial duration, its topic likely related to the student's thesis. For students in the MA program in Musicology with Performance.  
Grading: INP, COM, N, F.

MUS 598  Units: 1.5  
MMus Practicum  
Degree recital required for performance candidates in final year.  
Grading: INP, COM, N, F.

MUS 598A  Units: 1.5  
MMus Practicum  
Degree recital required for performance candidates in final year.  
Grading: INP, COM, N, F.

MUS 598B  Units: 3.0  
MMus Graduating Compositions  
Project required for Music Technology candidates in final year.  
Grading: INP, COM, N, F.

MUS 598C  Units: 4.5  
MMus Practicum  
Students in the Master of Music (MMus) in Performance-Emphasis in String Quartet Program must complete a total of 3 recitals to fulfill this requirement.  
Grading: INP, COM, N, F.

MUS 598Q  Units: 1.5  
MMus Practicum  
Students in the Master of Music (MMus) in Performance-Emphasis in String Quartet Program must complete a total of 3 recitals to fulfill this requirement.  
Grading: INP, COM, N, F.

MUS 599  Units: 3.0  
MA Thesis  
Grading: INP, COM, N, F.

MUS 689  Units: 1.5  
Dissertation Proposal  
For candidates for the PhD in Musicology.  
Grading: INP, COM, N, F.

MUS 690  Units: 1.5 or 3.0  
Directed Studies  
Note: May be taken more than once for credit with permission of the school.

MUS 693  Units: 3.0  
PhD Candidacy Examinations  
Students enrol in MUS 693 for the duration of their preparation for their candidacy examinations. This begins at the time a student first enrols in the PhD program and continues until candidacy requirements have been completed.  
Grading: INP, COM, N, F.

MUS 699  Units: 30  
PhD Dissertation  
Grading: INP, COM, N, F.

NRSC 500A  Units: 1.5  
Formerly: part of NRSC 500  
Fundamentals of Cellular Neuroscience  
Provides a foundational basis in neuroscience. Comprehensive instruction in cellular molecular and systems neuroscience.  
Note: Credit will be granted for only one of NRSC 500A, NRSC 500.  
Prerequisite(s):  
• Admission to the Neuroscience program; or  
• permission of the Division.

NRSC 500B  Units: 1.5  
Formerly: part of NRSC 500  
Fundamentals of Cognitive Neuroscience  
Provides a foundational basis in neuroscience. Comprehensive instruction in behavioral and cognitive neuroscience.  
Note: Credit will be granted for only one of NRSC 500B, NRSC 500.  
Prerequisite(s):  
• Admission to the Neuroscience program; or  
• permission of the Division.

NRSC 501A  Units: 1.5  
Advanced Topics in Cellular Neuroscience I  
Seminar on current topics in Cellular Neuroscience.  
Notes:  
• For admitted Neuroscience students, this course is required in the first year of their program.  
• The course runs from September to April.  
• A grade of INP (in progress) will be given until the second enrolled term is completed.
NRSC 501B - NUED 570

Advanced Topics in Cognitive Neuroscience I
Seminar on current topics in Cognitive Neuroscience.
Notes:
• For admitted Neuroscience students, this course is required in the first year of their program.
• The course runs from September to April.
• A grade of INP (in progress) will be given until the second enrolled term is completed.

NRSC 502A - NUED 570
Advanced Topics in Cellular Neuroscience II
Seminar on current topics in Cellular Neuroscience.
Notes:
• Registration in NRSC 502A is mandatory (after completion of NRSC 501A) every year the student is enrolled in the graduate program.
• The course runs from September to April.
Prerequisite(s): NRSC 501A or NRSC 501B.
Grading: INP, COM, N, F.

NRSC 502B - NUED 570
Advanced Topics in Cognitive Neuroscience II
Seminar on current topics in Cognitive Neuroscience.
Notes:
• Registration in NRSC 502B is mandatory (after completion of NRSC 501B) every year the student is enrolled in the graduate program.
• The course runs from September to April.
Prerequisite(s): NRSC 501A or NRSC 501B.
Grading: INP, COM, N, F.

NRSC 587 - NUED 570
Advanced Topics in Neuroscience
Topics of current interest in Neuroscience.
Notes:
• May be taken more than once for credit in different topics with permission of the program.
• Pro Forma required.
Prerequisite(s): Permission of the program.

NRSC 590 - NUED 570
Directed Studies in Neuroscience
Research projects or directed readings.
Notes:
• May be taken more than once for credit in different topics with permission of the program.
• Pro Forma required.
Prerequisite(s): Permission of the program.

NRSC 599 - NUED 570
MSc Thesis
A thesis comprising an original scientific study and/or scientific analysis of a problem germane to contemporary neuroscience.
Note: Students who have completed equivalent prerequisites may request permission to register in the course.
Prerequisite(s):
• NRSC 595, or
• permission of the program.
Grading: INP, COM, N, F.

NRSC 600A - NUED 570
Formerly: part of NRSC 600
Fundamentals of Cellular Neuroscience
Provides a foundational basis in neuroscience and comprehensive instruction in cellular, molecular, and systems neuroscience.
Note: Credit will be granted for only one of NRSC 600A, NRSC 600.

NRSC 600B - NUED 570
Formerly: NRSC 600
Fundamentals of Cognitive Neuroscience
Provides a foundational basis in neuroscience and comprehensive instruction in behavioral and cognitive neuroscience.
Note: Credit will be granted for only one of NRSC 600B, NRSC 600.

NRSC 601A - NUED 570
Advanced Topics in Cellular Neuroscience I
Seminar on current topics in Cellular Neuroscience.
Notes:
• For admitted Neuroscience students, this course is required in the first year of their program.
• The course runs from September to April.
• A grade of INP (in progress) will be given until the second enrolled term is completed.

NRSC 601B - NUED 570
Advanced Topics in Cognitive Neuroscience I
Seminar on current topics in Cognitive Neuroscience.
Notes:
• For admitted Neuroscience students, this course is required in the first year of their program.
• The course runs from September to April.
• A grade of INP (in progress) will be given until the second enrolled term is completed.

NRSC 602A - NUED 570
Advanced Topics in Cellular Neuroscience II
Seminar on current topics in Cellular Neuroscience.
Notes:
• Registration in NRSC 602A is mandatory (after completion of NRSC 601A) every year the student is enrolled in the graduate program.
• The course runs from September to April.
Prerequisite(s): NRSC 601A or NRSC 601B.
Grading: INP, COM, N, F.

NRSC 602B - NUED 570
Advanced Topics in Cognitive Neuroscience II
Seminar on current topics in Cognitive Neuroscience.
Notes:
• Registration in NRSC 602B is mandatory (after completion of NRSC 601B) every year the student is enrolled in the graduate program.
• The course runs from September to April.
Prerequisite(s): NRSC 601A or NRSC 601B.
Grading: INP, COM, N, F.

NRSC 687 - NUED 570
Advanced Topics in Neuroscience
Topics of current interest in Neuroscience.
Notes:
• May be taken more than once for credit with permission of the program.
• Pro Forma required.
Prerequisite(s): Permission of the program.

NRSC 690 - NUED 570
Directed Studies in Neuroscience
Research projects or directed readings.
Notes:
• May be taken more than once for credit with permission of the program.
• Pro Forma required.
Prerequisite(s): Permission of the program.

NRSC 693 - NUED 570
Candidacy Examination
The Candidacy exam will consist of a defence of a written proposal on the student’s proposed dissertation research project and an oral exam based on the background material and research components of the proposal. The exam committee will be composed of a chair and at least three examiners.
Note: Students enrol in NRSC 693 upon admission to the PhD program and remain enrolled until all candidacy requirements are complete.
Grading: INP, COM, N, F.

NRSC 699 - NUED 570
PhD Dissertation
A dissertation containing an original scientific study which adds new knowledge to the field of neuroscience.
Notes:
• Students who have completed equivalent prerequisites may request permission to register in the course.
• Students possessing a MSc will require 21 units to fulfill program requirements.
• Students possessing a BSc will require 30 units to fulfill program requirements.
Prerequisite(s):
• NRSC 693; or
• permission of the program.
Grading: INP, COM, N, F.

NUED
Nursing, Advanced Practice: Nurse Educator Option
School of Nursing
Faculty of Human and Social Development
All nursing courses are open to Nursing students only unless otherwise noted in the course description. When a course is oversubscribed, preference will be given to Nursing students who are closest to graduation. Contact the School of Nursing or refer to current timetable for course offerings.
Courses offered by the School of Nursing are also found under the following course codes: NUHI, NUNP, NURA, NURP, and NURS.

NUED 570 - NUED 570
Engaging with Pedagogy: Teaching and Learning in Nursing Education
Prepares students to explore and critically examine the philosophical, theoretical and ethical perspectives informing pedagogy in nursing education.
Note: Credit will be granted for only one of NUED 570, NURA 530.
NUED 571  Units: 1.5
Critical Pedagogy in Nursing Education and Evaluation
Students identify and critique ideologies and discourses relevant to teaching, learning and evaluation.
Note: Credit will be granted for only one of NUED 571, NUNP 531.
Prerequisite(s): NUED 570.

NUED 572  Units: 1.5
Intersectoral Course and Curriculum Design in Nursing Education
Students apply theoretical and critical knowledge in the development of nursing curriculum, courses and learning activities for intersectoral nursing education practice.
Note: Credit will be granted for only one of NUED 572, NURA 532.
Prerequisite(s): NUED 570.

NUED 573  Units: 1.5
Nurse Educator Practice I
Students will have opportunities to further integrate their evolving knowledge of Advanced Practice Nursing. Nurse Educator option through working with expert teachers in clinical, academic, and/or community settings.
Pre- or Corequisite(s): NUED 570.
Grading: INC, COM, N, F.

NUED 574  Units: 1.5
Nursing Education Practice and Curriculum Design
Students further integrate knowledge of Advanced Practice Nursing as a Nurse Educator through teaching practice and curriculum design in clinical, academic and/or community practice settings. In collaboration with a field guide, students engage in a minimum of 104 practice hours.
Prerequisite(s):
• NUED 570 and NUED 573 or,
• permission of the department.
Grading: INC, COM, N, F.

NUED 578  Units: 3.0
Research Project
Student are required to conduct a major research project encompassing both the health informatics and nursing disciplines under the co-supervision of a faculty member from each School. The project is intended to facilitate synthesis of students’ graduate experience and contribute to their development as leaders in health informatics and nursing.

NUED 599  Units: 6.0
Thesis
Students working independently, with faculty guidance from both Nursing and Health Information Science, complete a thesis to meet specific professional and academic goals. The thesis will entail research in a topic area chosen in consultation with the student’s supervisory committee. Evaluation of this course will be carried out as per Faculty of Graduate Studies regulations.
Grading: INP, COM, N, F.

NUHI
Nursing and Health Information Science
School of Nursing
Faculty of Human and Social Development
Specifically for Double-Degree MN option in Nursing and Health Information Science.
All Nursing courses are open to Nursing students only unless otherwise noted in the course description. When a course is oversubscribed, preference will be given to Nursing students who are closest to graduation. Contact the School of Nursing or refer to current timetable for course offerings. Courses offered by the School of Nursing are also found under the following course codes: NUED, NUNP, NURA, NURP, and NURS.

NUNP
Nursing, Advanced Practice: Nurse Practitioner Option
School of Nursing
Faculty of Human and Social Development
All Nursing courses are open to Nursing students only unless otherwise noted in the course description. When a course is oversubscribed, preference will be given to Nursing students who are closest to graduation. Contact the School of Nursing or refer to current timetable for course offerings. Courses offered by the School of Nursing are also found under the following course codes: NUHI, NUNP, NURA, NURP and NURS.

NUNP 531  Units: 1.5
Applied Pathophysiology
Provides students with the advanced knowledge of pathophysiology required to understand, diagnose and treat health and illness in primary health care contexts. Includes an overview of individual and family growth and development as well as the epidemiology of health and disease across the lifespan. Students will learn about the etiology, signs and symptoms, assessment and treatment of common acute/episodic health conditions, diseases or disorders and chronic illnesses prevalent across the lifespan.

NUNP 532  Units: 1.5
Pharmacological Interventions in Health and Illness
Students gain advanced knowledge of pharmacology, including pharmacokinetics and pharmacodynamics, as well as evidence informed practice in the selection, prescription and monitoring of drugs to treat diseases, conditions and injuries. Students learn to select drug therapy based on knowledge of pharmacology, drug interactions, client health history and disease, disorder or condition. Students prepare to write prescriptions that meet provincial and federal standards and legislative requirements, including responsibilities relevant to prescription and management of controlled substances.

NUNP 537  Units: 1.5
Family Nurse Practitioner Integration Internship
Designed to assist students in consolidating and applying the knowledge, skills and abilities from the NP program to their practice as family nurse practitioners. Students complete 200 practice hours under the supervision of a faculty instructor and practice mentor(s). Students will assume a leadership role in addressing gaps in health services, promoting continuity of care and fostering health prevention and promotion. There is a required on-site component.
Note: Students will be required to demonstrate knowledge and skills obtained in all of NUNP 531, NUNP 532, NUNP 540, NUNP 541, NUNP 543, NUNP 544, NUNP 545, NUNP 546, NUNP 547, NUNP 548 upon enrolment in NUNP 537 if 12 months or more have lapsed between completing prerequisite courses and enrolling in NUNP 537.
Prerequisite(s): All of NUNP 531, NUNP 532, NUNP 540, NUNP 541, NUNP 543, NUNP 544, NUNP 545, NUNP 546, NUNP 547, NUNP 548.
Grading: INP, COM, N, F.

NUNP 540  Units: 1.5
Advanced Assessment and Diagnostic Reasoning
Theory
The theoretical knowledge, judgment, skills, and abilities required by advanced practice nurses, to assess individuals across the lifespan, families and communities. Includes comprehensive and holistic health assessments that integrate the psychosocial, emotional, ethical, cultural, and spiritual dimensions of health, health promotion and disease prevention, and diagnostic reasoning. Integration of an advanced practice nursing perspective will help students critique various approaches to assessment of health and illness.
Notes:
• Credit will be granted for only one of NUNP 540, NUNP 533.
• A student must pass both theory and practice corequisites to advance to the next set of corequisite theory and practice courses. If a student fails one corequisite course they may be required to complete both corequisites again the next time they are offered.
• Students will be required to demonstrate knowledge and skills obtained in NUNP 531, NUNP 532, upon enrolment in NUNP 540 and NUNP 541 if 12 months or more have lapsed between their completing these courses and enrolling in NUNP 540 and NUNP 541.
Prerequisite(s): NUNP 531 and NUNP 532.
Corequisite(s): NUNP 541.
NUNP 541 - Units: 1.5
Advanced Assessment and Diagnostic Reasoning Practice
An opportunity for 150 hours of practice experience through the application of theoretical knowledge required by advanced practice nurses, to assess individuals across the lifespan, families and communities. The focus is on the development of students’ knowledge, skills and abilities related to the application of core nurse practitioner (NP) competencies of client care, quality improvement and research, leadership, and education. There will be two required onsite components in this course.

Notes:
• Credit will be granted for only one of NUNP 541, NUNP 533.
• A student must pass both theory and practice corequisites to advance to the next set of corequisite theory and practice courses. If a student fails one corequisite course they may be required to complete both corequisites again the next time they are offered.
• Prerequisite(s): NUNP 531 and NUNP 532.
• Corequisite(s): NUNP 540.

Grading: INC, COM, N, F.

NUNP 543 - Units: 1.5
Integrated Primary Health Care and Advanced Practice Nursing: I (Theory) (Adult I)
Advanced practice nursing with persons who experience episodic illness conditions, chronic diseases, and complex health challenges. Particular attention is paid to theoretical perspectives and skill development related to nurse practitioner core competencies with culturally diverse young to middle-aged adults and families. Selected concepts, theories, and research associated with health promotion and maintenance, and illness prevention are explored within the community context. Students will receive a letter grade upon completion.

Notes:
• Credit will be granted for only one of NUNP 543, NUNP 534, NUNP 550.
• A student must pass both theory and practice corequisites to advance to the next set of corequisite theory and practice courses. If a student fails one corequisite they may be required to complete both corequisites again the next time they are offered.
• Prerequisite(s): All of NUNP 531, NUNP 532, NUNP 540, NUNP 541.
• Corequisite(s): NUNP 544.

Grading: INC, COM, N, F.

NUNP 544 - Units: 1.5
Integrated Primary Health Care and Advanced Practice Nursing: I (Practice) (Adult I)
An opportunity for 150 hours of practice experience through which students engage in advanced practice nursing under the guidance of a course instructor and clinical preceptor. Integration of philosophical, theoretical, and methodological perspectives gleaned from 543 as well as from core courses within the program is sought. There will be a required onsite component to this course. Upon completion of the practice component, students will receive a pass/fail grade.

Notes:
• Credit will be granted for only one of NUNP 544, NUNP 534, NUNP 551.
• A student must pass both theory and practice corequisites to advance to the next set of corequisite theory and practice courses. If a student fails one corequisite they may be required to complete both corequisites again the next time they are offered.
• Prerequisite(s): All of NUNP 531, NUNP 532, NUNP 540, NUNP 541.
• Corequisite(s): NUNP 543.

Grading: INC, COM, N, F.

NUNP 545 - Units: 1.5
Integrated Primary Health Care and Adv Practice Nurs Theory II
Advanced practice nursing with persons who experience episodic illness conditions, chronic diseases, and complex health challenges. Particular attention is paid to theoretical perspectives and skill development related to nurse practitioner core competencies with culturally diverse childrearing families, infants, children, adolescents, and pregnant women. Health promotion and illness prevention are explored within the community context. After completion of the theory component, students will receive a letter grade.

Notes:
• Credit will be granted for only one of NUNP 545, NUNP 535, NUNP 560.
• A student must pass both theory and practice corequisites to advance to the next set of corequisite theory and practice courses. If a student fails one corequisite they may be required to complete both corequisites again the next time they are offered.
• Prerequisite(s): All of NUNP 531, NUNP 532, NUNP 540, NUNP 541, NUNP 543 and NUNP 544 upon enrolment in NUNP 545 and NUNP 546 if 12 months or more have lapsed between completing prerequisite courses and enrolling in NUNP 545 and NUNP 544.
• Corequisite(s): NUNP 543.

Grading: INC, COM, N, F.

NUNP 546 - Units: 1.5
Integrated Primary Health Care and Adv Practice Nurs Theory II
An opportunity for 150 hours of practice experience through which students engage in advanced practice nursing under the guidance of a course instructor and clinical preceptor. Integration of philosophical, theoretical, and methodological perspectives gleaned from 545 as well as from core courses within the program is sought. There will be a required onsite component to this course. Upon completion of the practice component, students will receive a pass/fail grade.

Notes:
• Credit will be granted for only one of NUNP 544, NUNP 534, NUNP 551.
• A student must pass both theory and practice corequisites to advance to the next set of corequisite theory and practice courses. If a student fails one corequisite they may be required to complete both corequisites again the next time they are offered.
• Prerequisite(s): All of NUNP 531, NUNP 532, NUNP 540, NUNP 541, NUNP 543 and NUNP 544 upon enrolment in NUNP 545 and NUNP 546 if 12 months or more have lapsed between completing prerequisite courses and enrolling in NUNP 545 and NUNP 546.
• Corequisite(s): NUNP 543.

Grading: INC, COM, N, F.

NUNP 547 - Units: 1.5
Integrated Primary Health Care and Adv Practice Nurs Theory III
Advanced practice nursing with persons experiencing episodic illness conditions, chronic diseases, and complex health challenges. Particular attention is paid to theoretical perspectives and skill development related to nurse practitioner core competencies with culturally diverse older adults and families. Selected concepts, theories, and research associated with health promotion and maintenance, illness prevention, chronic disease management, and end of life care are explored within the community context. Upon completion students receive a letter grade.

Notes:
• Credit will be granted for only one of NUNP 547, NUNP 534, NUNP 550.
• A student must pass both theory and practice corequisites to advance to the next set of corequisite theory and practice courses. If a student fails one corequisite they may be required to complete both corequisites again the next time they are offered.
• Prerequisite(s): All of NUNP 531, NUNP 532, NUNP 540, NUNP 541, NUNP 543, NUNP 544, NUNP 545, NUNP 546, and NUNP 547 if 12 months or more have lapsed between completing prerequisite courses and enrolling in NUNP 547 and NUNP 548.
• Corequisite(s): NUNP 545.

Notes:
• Credit will be granted for only one of NUNP 544, NUNP 534, NUNP 551.
NUNP 548  Units: 1.5  
Integrated Primary Health Care and Adv Pract Nurs Practica III

An opportunity for 150 hours of practice experience through which students engage in advanced practice nursing under the guidance of a course instructor and clinical preceptor. Integration of philosophical, theoretical and methodological perspectives gleaned from 547 as well as from core courses within the program is sought. There will be a required onsite component to this course. At the completion of the practice component, students will receive a pass/fail grade.

Notes:
• Credit will be granted for only one of NUNP 548, NUNP 534, NUNP 551.
• A student must pass both theory and practice corequisites to advance to the next set of corequisite theory and practice courses. If a student fails one corequisite they may be required to complete both corequisites again the next time they are offered.
• Students may be required to demonstrate knowledge and skills obtained in NUNP 531, NUNP 532, NUNP 540, NUNP 541, NUNP 543, and NUNP 544, NUNP 545, and NUNP 546 upon enrolment in NUNP 547 and NUNP 548 if 12 months or more have lapsed between completing prerequisite courses and enrolling in NUNP 547 and NUNP 548.

Prerequisite(s): All of NUNP 531, NUNP 532, NUNP 540, NUNP 541, NUNP 543, NUNP 544, NUNP 545, and NUNP 546. 

Corequisite(s): NUNP 547.

Grading: INC, COM, N, F.

NUNP 593  Units: 1.5  
Capstone Synthesis

The culminating educational experience for NP students, and the singular opportunity for faculty members to assess students’ evolution toward the terminal goals of the MN-NP program. Serves as an evaluation instrument in which students demonstrate their synthesis of coursework, knowledge, skills and experiential learning, to reveal a broad mastery of their learning across the curriculum in preparation for successful registration, initial employability and further career advancement.

Grading: INC, COM, N, F.

NURA 516  Units: 1.5  
Advancing Nursing Practice

Exploration of advanced practice nursing leadership roles and competencies with a focus on the patient/client and the nurses/nursing spheres of influence. Collaboration and consultation competencies as they relate to client-centred care and interprofessional/intersectoral teams and working with organizations will also be explored.

Pre- or Corequisite(s):
• NURS 520; or
• permission of the department.

NURA 517  Units: 1.5  
Leading in Practice Settings

Integration of students’ evolving knowledge of Advanced Practice Nursing through practice with a particular population. In collaboration with faculty and a field guide, students develop a personalized learning plan that focuses on clinical leadership, consultation, collaboration and research competencies. Students also participate in an online community with their peers for a total of 104 practice hours.

Pre- or Corequisite(s):
• NURA 516; or
• permission of the department.

NURA 518  Units: 1.5  
Health Policy and Praxis

Provides an applied approach to the concepts, conceptual frameworks, procedures and techniques of evidence-based health policy and politics. Through learning activities and in collaboration with a field guide, students engage in a minimum of 104 practice hours to enhance understanding of policy-making processes and how evidence can integrate with policy in the health sector and advanced practice nursing.

Pre- or Corequisite(s):
• NURA 516; or
• permission of the department.

Grading: INC, COM, N, F.

NURA 519  Units: 1.5  
Leadership for Health Systems

Exploration of the influences and effects of contemporary leadership practices related to health systems and organizations. The impact of current organizational structures and discourses on the delivery of health care, development of health policy and enactment of advanced practice nursing will be explored.

Pre- or Corequisite(s):
• NURA 516; or
• permission of the department.

NURS 500  Units: 1.5  
Scholarly Writing for Advanced Practice Nursing

Review of academic writing fundamentals and processes. Students select topics relevant to their program focus and write a summary/critique of scholarly literature, a limited literature review, and an argument paper. Students learn to participate in peer review and revision to improve their writing.

NURS 503  Units: 1.5  
Qualitative Approaches to Research in Nursing

Nursing phenomena are considered through a range of qualitative research approaches. Central to this process is an exploration of interrelationships between and among philosophical tenets and the construction of research questions, selection of methods, and theoretical influences on data interpretation and analysis for a range of qualitative approaches to research.

Pre-requisite(s):
• NURS 508; or
• permission of the school.

NURS 509  Units: 1.5  
Evaluation of Health Care

Exploration of concepts, theories and strategies for evaluating nursing care and health programs/services as applied to a range of health care settings.

Pre-requisite(s):
• NURS 508 and NURA 516; or
• permission of the school.

NURS 510  Units: 1.5  
Applied Statistics in Nursing

Students will develop familiarity with advanced statistical methods as they are applied to nursing and health care. These will include multiple linear regression, factor analysis, and multivariate analysis of variance. A brief introduction to structural equation modelling and psychometric methods may be offered.

Pre-requisite(s):
• NURS 425; or
• permission of the school.

NURS 520  Units: 1.5  
Philosophy for Advanced Practice Nursing

Explores philosophical discourses in the study of nursing, and introduces a philosophical framework that includes ontological, epistemological, and ethical knowledge for critique and expansion, including Indigenous perspectives. Emphasis is placed on paradigms of belief that inform and support innovation and creativity for human flourishing in advanced practice nursing.

Note: Credit will be granted for only one of NURS 520, NURS 506, NURA 511, NURA 512.
<table>
<thead>
<tr>
<th>COURSE LISTINGS NURS</th>
<th>319</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NURS 521</strong> Units: 1.5</td>
<td><strong>NURS 549</strong> Units: 1.5</td>
</tr>
<tr>
<td>Formerly: NURS 507</td>
<td><strong>Health Services Research</strong></td>
</tr>
<tr>
<td><strong>Advanced Practice Nursing and Professional Identity</strong></td>
<td>This course introduces nurses to health services research and examines the contributions that nurses make to this field of inquiry and to the health care system. Issues of significance for nurses and the knowledge nurses need to understand and engage in nursing health services research are explored. Key concepts such as population health, health care delivery, health policy, quality of care and related research methods will be examined.</td>
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<tr>
<td>Explores nursing as an academic field of study with emphasis on theories, including Indigenous perspectives that inform and shape the discipline of nursing, professional identity, and advanced practice nursing. Critique, expansion, and limits of theory are examined within a philosophical framework of ontological, epistemological, and ethical congruence.</td>
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<tr>
<td><strong>Prerequisite(s):</strong> NURS 520</td>
<td><strong>Prerequisite(s):</strong> permission of the department.</td>
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<tr>
<td><strong>NURS 522</strong> Units: 1.5</td>
<td><strong>NURS 568</strong> Units: 1.5</td>
</tr>
<tr>
<td>Formerly: NURS 514</td>
<td><strong>Trends and Issues in Advanced Practice Nursing</strong></td>
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<tr>
<td><strong>Nursing Ethics for Health System Transformation</strong></td>
<td>Students have the opportunity to explore the notion of advanced practice nursing (APN) and to consider the mandate, competencies, and divergent perspectives and knowledge bases related to APN as they challenge and extend the boundaries of nursing practice and advance the profession. Students will consider issues related to the definitions, competencies, legal, and ethical issues related to APN locally, nationally and internationally.</td>
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<tr>
<td>Explores various theories, including decolonizing practices and Indigenous perspectives that inform ethics for advanced practice nursing, collaboration, decision-making, and change in light of health care system trends, issues and roles for nurses. Critique, expansion, and limits of ethics are examined within a philosophical framework of ontological, epistemological, and ethical congruence.</td>
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<tr>
<td><strong>Notes:</strong> Credit will be granted for only one of NURS 521, NURS 507, NURA 512, NURA 513.</td>
<td><strong>Note:</strong> Not open for credit to students with credit in all of NURS 565, NURS 566, NURS 567.</td>
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<tr>
<td><strong>NURS 524</strong> Units: 1.5</td>
<td><strong>NURS 590</strong> Units: To be determined</td>
</tr>
<tr>
<td>Formerly: NURS 502B</td>
<td><strong>Directed Studies</strong></td>
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<tr>
<td><strong>Evidence for Advanced Practice Nursing</strong></td>
<td>An opportunity for students to develop individual studies at the graduate level (e.g., directed readings, research project etc.) with the supervision of one or more faculty members. A plan of study including focus, credit value and evaluation method is developed in consultation with a faculty member and must be approved by the graduate adviser prior to registering in this course.</td>
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<tr>
<td>Critique, expansion and limits of research are examined within a researcher pathway and philosophical framework. Understand and develop competencies of knowledge synthesis and statistical literacy as a basis for using evidence in advanced practice nursing and health policy. Distinguish among quality improvement, program evaluation and research.</td>
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<tr>
<td><strong>Notes:</strong> Credit will be granted for only one of NURS 524, NURS 502B, NURS 508, NURA 515.</td>
<td><strong>Notes:</strong></td>
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<tr>
<td>• Students who have equivalent undergraduate level statistics and research course successfully completed within the past five years may request permission of the school to register in the course.</td>
<td>• May be taken more than once for credit in different topics with permission of the school.</td>
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<tr>
<td><strong>NURS 525</strong> Units: 1.5</td>
<td><strong>NURS 596</strong> Units: 1.5</td>
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<tr>
<td>Formerly: NURS 502A</td>
<td><strong>Nursing Scholarship Integration and Dissemination</strong></td>
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<tr>
<td><strong>Disciplinary Research for Advanced Practice Nursing</strong></td>
<td>Exploration of creative ways to integrate and disseminate what students have learned from the Master of Nursing program. Students produce a scholarly paper, present their work, and respond to questions.</td>
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<tr>
<td>Develop an understanding of research processes comprising critical analysis of existing knowledge, including Indigenous perspectives, creating relevant research questions, discerning appropriate methodologies, and critiquing research within interpretive approaches and statistical literacy. Critique, expansion, and limits of research are examined within a researcher pathway, philosophical framework, and the integral role of research in advanced practice nursing.</td>
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<td><strong>Notes:</strong></td>
<td><strong>Note:</strong></td>
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<tr>
<td>• Credit will be granted for only one of NURS 525, NURS 502A, NURS 507, NURS 508, NURA 512, NURA 513.</td>
<td>Credit will be granted for only one of NURS 596, NURS 598.</td>
</tr>
<tr>
<td>• Students who have equivalent undergraduate level statistics and research course successfully completed within the past five years may request permission of the school to register in the course.</td>
<td><strong>Grading:</strong> INP, INC, COM, N, F.</td>
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<tr>
<td><strong>NURS 598</strong> Units: 3.0</td>
<td><strong>Practice Project</strong></td>
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<tr>
<td><strong>COURSE LISTINGS NURS</strong></td>
<td>Students will complete a project that is creative, innovative and contributes to scholarly nursing practice in an area of professional interest. The project is intended to facilitate synthesis of students' graduate experience and contribute to their development as advanced practice nurses. The project is an alternative to the Thesis Option (NURS 599). Evaluation of this course will be carried out as per Faculty of Graduate Studies regulations.</td>
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<tr>
<td><strong>Notes:</strong></td>
<td><strong>Notes:</strong></td>
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<tr>
<td>• Credit will be granted for only one of NURS 598, NURS 596.</td>
<td>• Credit will be granted for only one of NURS 598, NURS 596.</td>
</tr>
<tr>
<td>• The examining committee of a student sitting a non-thesis oral will be comprised of a supervisor, a committee member and a Chair.</td>
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</tr>
<tr>
<td><strong>Grading:</strong> INP, INC, COM, N, F.</td>
<td><strong>Grading:</strong> INP, INC, COM, N, F.</td>
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</table>
NURS 620 - PAAS 580

NURS 620  Units: 1.5 or 3.0  Research Internship
Research Internships are arranged with a specific faculty member and may be taken over one or several terms. During the Research Internship, a learner will have hands-on experiences with several aspects of research, for example, the conceptualization of a study, study design, applying for funding, obtaining ethical approval, accessing the field, collecting and analyzing data, writing, and knowledge translation.
Prerequisite(s): Permission of the school.
Grading: INP, COM, N, F.

NURS 621  Units: 1.5  Doctoral Seminar
Provides students with opportunities to engage in dialogue about the contribution of doctoral education to the academic discipline and the professional practice of nursing. Students examine issues relevant to the nursing discipline and profession and meet with established doctorally prepared scholars as they consider possibilities for research and scholarship within their own doctoral studies
Note: This seminar course takes place over two terms.
Grading: INP, COM, N, F.

NURS 622  Units: 1.5  Dissertation Seminar
Opportunities to engage in dialogue about topics that will support their preparation for doctoral candidacy exams and dissertation research. Students actively participate in the planning and process of the course, taking leadership roles and presenting their own scholarly work.
Grading: INP, COM, N, F.

NURS 630  Units: 1.5 or 3.0  Teaching Internship
Teaching Internships may be arranged with a specific faculty member and may be taken over one or several terms. During the Teaching Internship, a student will engage with several aspects of nursing education, for example, classroom or on-line teaching, educational research initiatives and/or, writing a paper for publication.
Note: Pro Forma required.
Prerequisite(s): Permission of the school.
Grading: INP, COM, N, F.

NURS 679  Units: 1.5-4.5  Research and Scholarship Seminar
Based on an understanding of scholarship as a social and communal activity, the course provides students with opportunities to have conversations about research, scholarly activity, and topics relevant to becoming stewards of the discipline. Students and faculty decide on topics, and share responsibility for organizing sessions and speakers.
Note: May be taken more than once for credit with permission of the program to a maximum of 4.5 units.
Grading: INP, COM, N, F.

NURS 680  Units: 1.5-4.5  Special Topics in Research Methods
Based on student demand, courses on the following focused topics will be organized for individuals or groups of students: issues of measurement, evaluation research, grounded theory, ethnography, hermeneutics and phenomenology, discourse analysis, historical analysis, instrument development and testing and participatory action research. This research-focused course is available to small groups of interested students and/or individuals by faculty members and/or visiting faculty.
Note:
• May be taken more than once for credit in different topics with permission of the school to a maximum of 4.5 units.
• Pro Forma required.
• Students will be required to take 1.5 units of NURS 680 coursework and can, with permission of their program supervisor, enrol in as many as 4.5 units of NURS 680 coursework.

NURS 690  Units: 1.5 or 3.0  Directed Studies
Provides opportunities for students to develop individual studies at the doctoral level (e.g., directed readings, research project etc.) with the supervision of one or more faculty members. A plan of study including focus, credit value and evaluation method is developed in consultation with a faculty member and must be approved by the graduate adviser prior to registering in this course. We encourage students interested in a research topic to register for a NURS 680 course rather than a NURS 690.
Note: Pro Forma required.
Prerequisite(s): Permission of the school.

NURS 693  Units: 3.0  Candidacy Examination
Students enrol in NURS 693 to prepare for their candidacy examination that includes: 1) completing candidacy exam papers or open-book exam and 2) successfully developing and defending a research proposal. Both milestones require an oral examination. The content of the papers or exam, related to course work, the substance and methodology of students’ research interests, and provides a basis for proposal development. Must be completed prior to registration in NURS 699.
Grading: INP, COM, N, F.

NURS 699  Units: 30.0  Dissertation
All doctoral students are required to prepare a dissertation upon which a public examination and defense is conducted. The dissertation must qualify as a significant and original contribution to disciplinary knowledge.
Prerequisite(s): NURS 693.
Grading: INP, COM, N, F.

PAAS 500  Units: 1.5  Theories of Pacific Region Societies
Offers a critical review of contemporary social theory pertinent to the study of Pacific and Asian societies. Drawing on various scholarly approaches from the fields of sociology, anthropology, political science and history, readings will address the institutions, mechanisms and values involved in social, cultural and political transformations. Focuses on current theory about the nature and scope of globalization, commodification, or modernization, with particular emphasis on the effect of these on local social and cultural practice.

PAAS 501  Units: 1.5  Cultural, Linguistic and Literary Theories in Asia-Pacific Studies
Offers a critical review of contemporary cultural and literary theory pertinent to the study of Pacific and Asian societies. Drawing from various scholarly approaches of Marxism, post-structuralism, semiotics, feminist psychoanalysis, and critical art history, readings will address the often implicit meanings and conceptual boundaries encoded in cultural and artistic products. Explores the consequences of modernization and global vs. local realms, with a focus on the disturbances and complexities they generate in the subjective realm, where they often form the basis of creative expressions.

PAAS 520  Units: 1.5  Special Topics in Pacific Studies
Focuses on an area of faculty specialization. The topic will vary but may include one of the following: migration studies; state and civil society; the politics of culture; global and local relations; and gender and ethnic identity.

PAAS 521  Units: 1.5  Special Topics in Asia-Pacific Literature, Linguistics and Culture
Focuses on an area of faculty specialization. The topic will vary but may include one of the following: theatre studies; postcolonial literature; linguistics; popular culture; cinema studies; and critical assessments of the works of individual authors and artists.

PAAS 550  Units: 1.5  Research Methodologies
Required of all graduate students. We will work through the mechanics of designing a thesis, from initial conceptualization through to methodologies and analysis. Students will design a full thesis proposal and participate in a mock defense.

PAAS 580  Units: 1.5  Advanced Readings in Japanese, Chinese or Indonesian
Critical reading and analysis of advanced works in the original language.
PAAS 590
Units: 1.5
Directed Studies
A directed readings course, to be taken with the thesis supervisor, which will allow students to develop in-depth understanding of their topic/area of specialization.
Note: May be taken more than once for credit in different topics to a maximum of 3 units.

PAAS 599
Units: 6.0-9.0
MA Thesis
Grading: INV, COM, N, F.

PADR
Public Administration Dispute Resolution
School of Public Administration
Faculty of Human and Social Development

PADR 501
Units: 1.5
Collaboration and Engagement
The 21st century workplace requires conflict resolution competence and collaborative skills to work effectively in public and non-profit sectors. Prepares students to anticipate, identify, assess, prevent, mitigate, and manage or resolve conflict. A critical approach to theory and practice is adopted and three distinctive areas of learning are woven together: integral theory and conflict analysis; negotiation; and facilitation.
Prerequisite(s): Admission to MA program in Dispute Resolution or admission to MPA program (on campus).

PADR 502
Units: 1.5
Formerly: PADR 502A
Analysis for the Public and Non-Profit Sectors
Provides an intensive introduction to qualitative and quantitative approaches and methods for research, policy analysis, evaluation and other analytical projects in the public and non-profit sectors. Offers students opportunities to learn and apply methodologies for evidence-informed decisions in organizational and inter-organizational settings.
Note: Credit will be granted for only one of PADR 502, PADR 502A, ADMN 502A, DR 515, CD 505.
Prerequisite(s): Admission to MA program in Dispute Resolution or admission to MPA program (on campus).

PADR 503
Units: 1.5
Professional Integrity in the Public and Non-Profit Sectors
Builds professional competencies and reflective practice skills for those working in the public and non-profit sectors. Using a case-based approach, topics include: ethical dilemmas and management of disputes, the issues of personal responsibility and accountability; loyalty to employer; political and professional neutrality and obligations to the public interest; conflict of interest; confidentiality and transparency; and privacy protection. Students study standards of conduct established in both sectors and the philosophical theories which underpin them.
Note: Credit will be granted for only one of PADR 503, ADMN 422, ADMN 554, DR 512.
Prerequisite(s): Admission to MA program in Dispute Resolution or admission to MPA program (on campus).

PADR 504
Units: 1.5
Leadership, Management, Ethics
Introduces theories of leadership, management development and practice, and ethics. Examines the role of leaders, managers and conflict specialists as agents of positive influence in complex socio-technical systems. Leadership, management and dispute resolution competencies are introduced and developed in individual, team, organizational, and inter-organizational contexts. Studies ethical matters: confidentiality, loyalty, political and professional neutrality; conflict of interest; privacy protection; transparency. Students apply concepts to self, others (as team members), leaders and managers.
Note: Credit will be granted for only one of PADR 503, PADR 504, ADMN 507, DR 511.
Prerequisite(s): Admission to MA program in Dispute Resolution or admission to MPA program (on campus).

PADR 505
Units: 1.5
Policy-making and Policy Communities
Students learn about the public policy-making process and develop skills in the art and craft of policy analysis. Introduces key concepts and theories and then builds skills and knowledge with information-gathering exercises, case studies, and preparation and presentation of decision briefs. Students review policy-making in a broad context, pulling together evidence and different analytical lenses for a variety of organizations and identify and recommend strategies and develop workable implementation and communication plans.
Note: Credit will be granted for only one of PADR 505, ADMN 556.
Prerequisite(s): Admission to MA program in Dispute Resolution or admission to MPA program (on Campus).

PADR 589
Units: 0
Co-op Seminar: Introduction to Professional Practice
Discuss the nature of co-operative education experiential expectations, how to bring learning into the co-op experience, and the services provided by the School of Public Administration Co-op Office. Guidance on how to succeed in co-op placements is provided: preparing résumés and covering letters, interviewing, networking, job development, managing diversity. Attendance at this non-credit course is required for all MADR and MPA On Campus students.
Notes:
- Credit will be granted for only one of PADR 589, ADMN 589, DR 589.
- Offered in the Fall academic term only.
Grading: INC, COM, N, F.

PHIL
Philosophy
Department of Philosophy
Faculty of Humanities

PHIL 500
Units: 1.5 or 3.0
Topics in Philosophy
Note: May be taken more than once for credit in different topics with permission of the department.

PHIL 514
Units: 1.5 or 3.0
Topics in Philosophy of Mind
Note: May be taken more than once for credit in different topics with permission of the department.

PHIL 521
Units: 1.5 or 3.0
Topics in Philosophy of Science
Note: May be taken more than once for credit in different topics with permission of the department.

PHIL 530
Units: 1.5 or 3.0
Topics in Logic
Note: May be taken more than once for credit in different topics with permission of the department.

PHIL 533
Units: 1.5 or 3.0
Topics in Applied Philosophy
Note: May be taken more than once for credit in different topics with permission of the department.

PHIL 534
Units: 1.5 or 3.0
Topics in Ethics
Note: May be taken more than once for credit in different topics with permission of the department.

PHIL 535
Units: 1.5 or 3.0
Topics in Social and Political Philosophy
Note: May be taken more than once for credit in different topics with permission of the department.

PHIL 541
Units: 1.5 or 3.0
Topics in Aesthetics
Note: May be taken more than once for credit in different topics with permission of the department.

PHIL 551
Units: 1.5 or 3.0
Topics in Epistemology
Note: May be taken more than once for credit in different topics with permission of the department.

PHIL 552
Units: 1.5 or 3.0
Formerly part of PHIL 551
Topics in Metaphysics
Notes:
- Credit will be granted for only one of PHIL 552, PHIL 551 (if taken in the same topic).
- May be taken more than once for credit in different topics with permission of the department.

PHIL 561
Units: 1.5 or 3.0
Topics in Philosophy of Language
Note: May be taken more than once for credit in different topics with permission of the department.

PHIL 570
Units: 1.5 or 3.0
Formerly part of PHIL 551
Topics in Logic
Note: May be taken more than once for credit in different topics with permission of the department.

PHIL 590
Units: 1.5 or 3.0
Directed Studies
Note: May be taken more than once for credit in different topics with permission of the department.
PHIL 591 - PHSP 542

PHIL 591  Units: 1.5
Research Methods Seminar
Exclusively for graduate students in philosophy. Aims to help students broaden their reading base and deepen their communication and critical skills by engaging with philosophical works and core issues in a variety of fields.

PHIL 592  Units: 1.5
Professional Development Practicum
Students must attend and demonstrate participation in philosophy colloquia, including regular preseminars, throughout the year. Attendance and evidence of participation will be tracked by the Graduate Adviser and Graduate Coordinator.
Grading: COM, N, F.

PHIL 598  Units: 4.5
Major Research Project
Students must complete a Major Research Project under the guidance of a supervisor and committee member. This project will normally take the form of a journal article-type submission. Normally the Major Research Project will be completed during the Summer Session following the first Winter Session. The Major Research Project is subject to Oral Examination by a committee.
Grading: INP, COM, N, F.

PHIL 693  Units: 3.0
Candidacy Examination
Grading: INP, COM, N, F.

PHIL 699  Units: 18.0
PhD Dissertation
Prerequisite(s): PHIL 693.
Grading: INP, COM, N, F.

PHSP

Public Health and Social Policy
School of Public Health and Social Policy
Faculty of Human and Social Development

PHSP 501  Units: 1.5
Public Health Epidemiology
An applied approach grounded in population-based data. Focuses on the distributions and determinants of health, disease, disability and mortality. Topics include: characteristics and dynamics of health and disease in human populations, including epidemiological strategies in examining the natural history of disease and the impact of disease on the population; population health assessment, surveillance and emerging social epidemiological models that attend to complex models of causation.

PHSP 502  Units: 1.5
Public Health Biostatistics
Uses an approach grounded in population-based data. Builds upon PHSP 501, and focuses on understanding health inequities across diverse settings and populations using biostatistics and epidemiological data to understand the life course determinants of health. Includes an overview of design and analysis of health-related data collection methods including survey methods. The basic concepts and methods of epidemiological biostatistical analysis are covered.
Prerequisite(s): PHSP 501.

PHSP 503  Units: 1.5
Public Health Practice I: Population Health and Health Promotion
Contributes to students’ theoretical and practical understanding of population health and its determinants as well as diverse constructions of health as a foundation for health promotion. Considers health promotion principles, models and approaches as well as inequalities in health in the context of social justice and cultural safety. Fosters understanding of health and its determinants, health inequalities in Canada and globally, and a more in-depth understanding in at least one area of health promotion.

PHSP 504  Units: 1.5
Supportive Environments and Healthy Public Policy
Social environmental factors that impact the health of the community. Using a social-ecological model, attends to understanding the integral role of policy in the development of supportive environments. With an emphasis on critical analysis of health policy, students explore the development of healthy public policy in the management of public health concerns.

PHSP 505  Units: 1.5
Public Health Practice II: Public Health Interventions
Focuses on the range of evidence-informed public health interventions employed in public health practice. Based on the BC Core Public Health Functions Framework, examines strategies used to improve the health of a population including provision of public health prevention and improvement programs, disease and injury prevention, environmental health and health emergency management; strategies for health protection, health promotion, disease surveillance; public health capacity and infrastructure; the impact of public health services on health inequity.

PHSP 506  Units: 1.5
Public Health Research and Evaluation
Emphasis on evidence-informed practice, and examining community-based research strategies to explicite applied knowledge within the field of public health. Topics include literature synthesis approaches; program evaluation; qualitative research methods; and mixed methods.

PHSP 507  Units: 1.5
Practicum
All graduate diploma students are required to complete a 225 hour practicum. This planned, supervised and evaluated practicum will usually be completed at the end of the student’s program of study. Graduate diploma students who complete the diploma and wish to then complete the Master of Public Health will be required to take PHSP 589.
Prerequisite(s): All of PHSP 501, PHSP 503, PHSP 505.
Corequisite(s): PHSP 508A.
Grading: INP, COM, INC, N, F.

PHSP 508A  Units: 1.5
Formerly: PHSP 508
Culminating Report
As a culmination of the practicum experience all Graduate Diploma students are required to complete a report that demonstrates a synthesis and integration of coursework and other learning experiences in preparation for professional public health practice. Graduate diploma students who complete the diploma and wish to then complete the Master of Public Health will be required to take PHSP 508B.
Prerequisite(s): All of PHSP 501, PHSP 503, PHSP 505.
Corequisite(s): PHSP 507.
Grading: INP, COM, INC, N, F.

PHSP 508B  Units: 3.0
Culminating Report
As a culmination of the practicum experience all Master of Public Health students are required to complete a report that demonstrates a synthesis and integration of coursework and other learning experiences in preparation for professional public health practice.
Notes:
- Credit will be granted for only one of PHSP 508B, PHSP 590 (if taken in the same topic).
- Students who register in PHSP 589 for 1.5 units over two terms may enrol in PHSP 506 concurrently.
Prerequisite(s): All of PHSP 501, PHSP 502, PHSP 503, PHSP 504, PHSP 505, PHSP 506.
Corequisite(s): PHSP 589.
Grading: INP, COM, INC, N, F.

PHSP 540  Units: 1.5
Knowledge Development in Public Health Nursing
Examines the history of public health nursing focusing on exemplary leaders engaged in creating change in their community. The emergence of nursing knowledge and understanding public health nursing as a synthesis of public health and nursing science is emphasized. Includes a critical examination of the roles of nurses in public health as well as exploring exemplary nurse led community based programs, services and policies related to disease prevention, health promotion and primary health care.

PHSP 541  Units: 1.5
Social Justice and Public Health Nursing
Emphasis on social justice as a philosophical base for public health nursing. From a critical perspective, students explore and compare theories of social justice. Drawing on personal and professional experience and using case examples, students explore the embodiment of social justice as ethical nursing practice.
Note: A requirement of this course is a condensed five-day on-campus seminar.

PHSP 542  Units: 1.5
Advanced Public Health Nursing Practice
Focuses on leadership and the conceptualization and application of advanced practice in public health nursing. Students engage in a critical analysis of advanced practice nursing as it relates to public health in Canadian and comparative contexts. Professional issues and advanced practice strategies are explored.
PHSP 543 Units: 1.5
Social Justice in Public Health
Explores social justice approaches to population health within inter-professional public health practice. Drawing on professional and personal experiences, students examine current public health priorities with a focus on health equity and health disparity.

PHSP 550 Units: 1.5
Perspectives in Social Policy and Public Health
Informed by values of social justice, equity and diversity, focuses on a range of theoretical and practical perspectives that critically assess social policy and practice and public health issues in Canada in historical, contemporary and comparative contexts.
Note: A requirement of this course is a condensed five-day on-campus seminar.

PHSP 551 Units: 1.5
Social Values, Ideologies, and Policy Analysis
Addresses how social determinants of health and well-being, including existing patterns of cultural, economic and political relations and resources, impact public policies and practices; and, in turn, how healthy public policy can positively affect social environments and determinants in Canadian communities and society.
Graduate course in the Public Health and Social Policy program administered by the Faculty of Graduate Studies.

PHSP 552 Units: 1.5
Healthy Public Policy Strategies
Examines an assortment of public health approaches, including policy techniques and plans relating to health promotion, policy analysis and advocacy, capacity building, forming partnerships and collaborations, and strengthening communities. Also considers the importance of healthy public policies for various groups facing health disparities.

PHSP 589 Units: 1.5 or 3.0
Practicum
All MPH students are required to complete a 450 hour practicum. This planned, supervised and evaluated experience will usually be completed at the end of the student’s program of study.
Notes:
• Students must take a total of 3.0 units of PHSP 589 in their MPH program.
• May be taken part-time over two consecutive terms (1.5 units per term) or full-time (3.0 units) in one term.
• The part-time practicum is only available in the Sep-Dec and Jan-Apr terms. The full time 3.0 unit practicum is only available in the Jan-Apr term.
• Students who register in PHSP 589 for 1.5 units over two terms may enrol in PHSP 589 concurrently.
• Students must pass both 1.5 unit sections of PHSP 589 in order to complete the course.
Prerequisite(s): All of PHSP 501, PHSP 502, PHSP 503, PHSP 504, PHSP 505, PHSP 506.
Corequisite(s): PHSP 508B.
Grading: INP, COM, INC, N, F.

PHSP 590 Units: 1.5-4.5
Directed Studies
Comprises individual studies involving directed readings, projects or special studies under the direction of a faculty member. A proposal is developed in consultation with a faculty member and includes a plan for the evaluation of the student’s work. The proposal must be approved by the Director or Program Manager before students are allowed to register.
Note: May be taken more than once for credit in different topics with permission of the program to a maximum of 4.5 units.

PHSP 591 Units: 1.5
Special Topics in Public Health Studies
Focuses on specific interests of students and faculty members in the School of Public Health and Social Policy.
Notes:
• Not open for credit to students with credit in any of HLTH 406, INGH 452, INGH 453, INTS 460, INTS 462 if in the same topic.
• May be taken more than once for credit in different topics with permission of the program.
• May be offered as a joint undergraduate and graduate class.

PHSP 599 Units: 6.0
Thesis
Students, working independently with faculty guidance, complete a thesis to meet specific professional and academic goals. The thesis will entail research in a topic area chosen in consultation with the student’s supervisory committee. The thesis option is an alternative to the Culminating Project (PHSP 598). Evaluation of this course will be carried out as per Faculty of Graduate Studies regulations.
Grading: INP, COM, N, F.

PHYS

Physics

Department of Physics and Astronomy

Faculty of Science
Students should consult the department concerning the courses offered in any particular year.

PHYS 500A Units: 1.5
Formerly: part of PHYS 500
Quantum Mechanics
Topics may include angular momentum and symmetries, perturbation theory, scattering theory, density operators, quantum statistical mechanics.
Note: Credit will be granted for only one of PHYS 500, PHYS 500A.

PHYS 501A Units: 1.5
Quantum Theory and Quantum Fields
Further topics in quantum theory, and an introduction to quantum field theory focussing on quantum electrodynamics.
Note: Credit will be granted for only one of PHYS 501A, PHYS 500B, PHYS 600A.
PHYS 534 Units: 1.5
Radiotherapy Physics I
Principles of dosimetry of ionizing radiation with emphasis on applications to radiotherapy and radiobiology. Provides the basics of linear accelerator design as well as design of X-ray generating apparatus; also provides basics of electron and photon interactions with media, energy deposition in media, and radiation protection and shielding.

PHYS 535 Units: 1.5
Radiotherapy Physics II
A continuation of 534. Covers the physics and applied dosimetry of current external and internal irradiation treatment techniques.

PHYS 539 Units: 1.5
Radiation Dosimetry
The fundamentals of radiation dosimetry, ionization cavity theories and radiation dosimetry protocols. A variety of absolute and relative dosimetry techniques are also covered, with hands-on experience provided through a series of lab exercises on medical linear accelerators. Monte Carlo simulation of radiation transport for dosimetry applications is introduced.

PHYS 540 Units: 1.5
Medical Imaging
Fundamental theory and application of medical imaging, including radiology, computed tomography, magnetic resonance imaging, ultrasound, and nuclear medicine imaging. Basic principles, image formation and reconstruction, imaging instrumentation and hardware, and current trends of each imaging modality will be given.

PHYS 544 Units: 1.5
Topics in Radiation Biophysics
Topics in radiation biophysics, including DNA strand breaks, cell survival curves, fractionation and dose rate effects, oxygen effect, relative biological effectiveness, tumour radiobiology, radiation pathology, radiobiological modelling, stochastic and deterministic effects, and molecular techniques in radiobiology.

PHYS 545 Units: 0.5
Anatomy and Physiology for the Medical Physicist
WebCT based course covering basics of anatomy and physiology. Aimed at students in medical physics who are interested in clinical and/or academic careers that will require interaction with radiation oncologists and other health care professionals.
Grading: INC, COM, N, F.

PHYS 546 Units: 0.5
Clinical Shadowing
Shadowing course designed to give the student some insight into the clinical aspects of the medical physics profession. Under the guidance of a clinical physicist, students progress through a series of clinical areas. Modules illustrate the collaborative nature of the profession and the interaction with other medical professionals.
Grading: INC, COM, N, F.

PHYS 550 Units: 1.5
Topics in Condensed Matter Physics
A selection of advanced topics in modern condensed matter physics.
Note: May be taken more than once for credit in different topics.

PHYS 555 Units: 1.5
Advanced Computing and Machine Learning for Physics and Astronomy
An introduction to the concepts and essential tools of advanced computing and machine learning, via hands-on application to diverse areas of physics and astronomy. Topics may include: advanced distributed, concurrent and parallel computing; big data tools and the use of structured and unstructured data; neural networks and machine learning, including supervised and unsupervised systems; data exploration and visualization.

PHYS 560 Colloquium
Weekly physics and astronomy colloquium.
Grading: INP, COM, N, F.

PHYS 561 Units: 0.0
Research Skills and Professional Development
Introduction to professional methods and best practices in research.
Grading: INP, COM, N, F.

PHYS 580 Directed Studies
Units: 1.0-3.0
Directed Studies
Notes:
• May be taken more than once for credit.
• Pro Forma required.

PHYS 599 MSc Thesis
Units: 7.5
MSc Thesis
Grading: INP, COM, N, F.

PHYS 662 Research Seminar
Units: 0.0
Research Seminar
Presentation of the research that comprises the major portion of the student's PhD thesis work in physics and astronomy in a departmental seminar, plus attendance at seminars given by other students. Students enroll in PHYS 662 during their preparation for the research seminar. This begins in the term immediately following completion of PHYS 693 and continues until the research seminar has been completed.
Prerequisite(s): PHYS 693.
Grading: INP, COM, N, F.

PHYS 693 PhD Candidacy Examination
Units: 3.0
PhD Candidacy Examination
Students enroll in PHYS 693 during their preparation for the candidacy examination. This begins at the time a student first enrolls in the PhD program and continues until candidacy requirements have been completed. The candidacy examination is to be completed no later than two years after the student first registers in (or transfers to) the PhD program.
Grading: INP, COM, N, F.

PHYS 699 PhD Dissertation
Units: 33.0
PhD Dissertation
Corequisite(s): PHYS 693.
Grading: INP, COM, N, F.

POLI 505 Units: 1.5
Problems of Political Analysis
An examination of theoretical viewpoints in the study of politics.

POLI 507 Units: 1.5
Comparative Policy and Governance
The study of diverging governance practices and policy outcomes in different jurisdictions. Focuses on: policy determinants such as history, culture, institutions, and the economy; policy dynamics and processes such as agenda-setting and decision-making, networks and communities, and policy change; and policy styles and transfer, referring to the state's ability to design, coordinate, implement and, learn from policy interventions. Students will review seminal studies and undertake a comparative policy project.

POLI 508 Units: 1.5
Comparative Politics
An examination of key issues and debates in the study of comparative politics. Involves a survey of the major literature in this field of political science.

POLI 509 Units: 1.5
Political Theory
An examination of key issues and debates in the study of political theory. Involves a survey of the major literature in this field of political science.

POLI 514 Units: 1.5
Politics of the European Union
An examination of key issues and debates in the study of the politics of the European Union. It will involve a survey of the major literature in the field of European politics.
Note: Credit will be granted for only one of POLI 514, POLI 533 (if taken in the same topic).

POLI 516 Units: 1.5
Canadian Politics
An examination of key issues and debates in the study of Canadian politics. Involves a survey of the major literature in this field of political science.

POLI 525 Units: 1.5
Politics of Global Challenges
Broad overview of changing patterns of politics and governance associated with globalization and the growth of global challenges, examined through study of concrete challenges in relation to each of the program’s four themes: Migration and Contested Borders; Political Economy and Development; (In)Security and Surveillance; Democracy and Human Rights.

POLI 533 Units: 1.5
Themes in Contemporary Politics
A seminar dealing with an important theme or themes in contemporary politics. The content will vary from year to year.
Note: May be taken more than once for credit with permission of the department.
POLI 540 - PSYC 504

COURSE LISTINGS PSYC

**POLI 540**  
**Units:** 1.5  
**International Relations**  
An examination of key issues and debates in the study of international relations. Involves a survey of the major literature in this field of political science.

**POLI 580**  
**Units:** 3.0  
**Legislative Internship Report**  
Graduation: INP, COM, N, F.

**POLI 590**  
**Units:** 1.5  
**Directed Readings**  
Note: May be taken more than once for credit in different topics to a maximum of 3 units.

**POLI 598**  
**Units:** 6.0  
**Major Research Paper**  
Based on an independent research project, normally 40-50 pages in length, under the guidance of the student’s supervisory committee. Normally completed during the first summer session.

**POLI 599**  
**Units:** 9.0  
**Thesis**  
Graduation: INP, COM, N, F.

**POLI 600**  
**Units:** 1.5  
**Professional Development Seminar**  
A compulsory seminar for PhD students in Political Science that runs from September until April. Students are introduced to the professional aspects of the discipline including: how to write grant applications, how to teach effectively, how to design a syllabus and a CV, how to contribute to the administrative and intellectual community in their department and in political science more broadly.

Graduation: COM, N, F.

**POLI 605**  
**Units:** 1.5  
**Problems of Political Analysis**  
A further examination of theoretical viewpoints in the study of politics. Intended for doctoral candidates preparing for comprehensive examinations.

**POLI 607**  
**Units:** 1.5  
Also: ADMN 605  
**Comparative Policy and Governance**  
Reviews the challenges and trends confronting governments and society, diverging governance practices and outcomes across jurisdictions and policy domains. Reviews foundational concepts and theories of policy-making. Examines policy determinants such as history, culture, institutions, and the economy, policy dynamics and processes such as agenda-setting and decision-making, networks and communities, policy change and transfer. Students conduct research on selected issues.

Note: Credit will be granted for only one of POLI 607, POLI 507, ADMN 605.

**POLI 608**  
**Units:** 1.5  
**Comparative Politics**  
An examination of key issues and debates in the study of comparative politics. Involves a survey of the major literature in this field of political science. Intended for doctoral candidates preparing for a comprehensive examination in the field.

**POLI 609**  
**Units:** 1.5  
**Political Theory**  
An examination of key issues and debates in the study of political theory. Involves a survey of the major literature in this field of political science. Intended for doctoral candidates preparing for a comprehensive examination in the field.

**POLI 610**  
**Units:** 1.5  
**Theories of Public Management**  
Explores different theories and approaches to understanding public administration and reform. Considers variations in three areas: political and constitutional authority, accountability and responsibility, and the roles of elected and non-elected officials; government structures, responsibilities for policy and service delivery, and distributed governance; and patterns and trends in central decision-making, budgeting, control, transparency, and citizen engagement. Students will review seminal comparative studies on administrative practice and reform and undertake a comparative study on a selected topic.

Note: Credit will be granted for only one of POLI 610, ADMN 604.

**POLI 614**  
**Units:** 1.5  
**Politics of the European Union**  
An examination of key issues and debates in the study of the politics of the European Union. Involves a survey of the major literature in the field of European politics.

Note: Credit will be granted for only one of POLI 614, POLI 633 (if taken in the same topic).

**POLI 616**  
**Units:** 1.5  
**Canadian Politics**  
An examination of key issues and debates in the study of Canadian politics. Involves a survey of the major literature in this field of political science. Intended for doctoral candidates preparing for a comprehensive examination in the field.

**POLI 633**  
**Units:** 1.5  
**Themes in Contemporary Politics**  
A seminar dealing with an important theme or themes in contemporary politics. The content will vary from year to year.

Note: May be taken more than once for credit in different topics with permission of the department.

**POLI 640**  
**Units:** 1.5  
**International Relations**  
An examination of key issues and debates in the study of international relations. Involves a survey of the major literature in this field of political science. It is intended for doctoral candidates preparing for a comprehensive examination in the field.

**POLI 690**  
**Units:** 1.5  
**Directed Readings**  
Note: May be taken more than once for credit in different topics to a maximum of 3 units.

**POLI 693**  
**Units:** 3.0  
**PhD Candidacy Examinations**  
Students enrol in POLI 693 for the duration of their preparation or their two candidacy examinations. This begins at the time a student first enrols in the PhD program and continues until candidacy requirements have been completed.

Graduation: INP, COM, N, F.

**POLI 699**  
**Units:** 30.0  
**Dissertation**  
Graduation: INP, COM, N, F.

**PSYC**

**Psychology**

**Department of Psychology**

**Faculty of Social Sciences**

**PSYC 500**  
**Units:** 1.5  
**Professional Development**  
Covers issues important to the academic and career success of graduate students in psychology. Topics include: how to write grant applications, how to teach effectively, how to design a syllabus and a CV, how to contribute to the administrative and intellectual community in their department and in political science more broadly.

Graduation: COM, N, F.

**PSYC 501**  
**Units:** 1.0-6.0  
**Practicum in Applied Psychology**  
Priced in an applied setting, 1 unit of credit equals approximately 100 hours.

Note: May be taken more than once for credit in different topics with permission of the department to a maximum of 6 units.

Graduation: INP, COM, N, F.

**PSYC 502**  
**Units:** 1.5-4.5  
**Research Apprenticeship**  
Notes:
- May be taken more than once for credit in different topics with permission of the department to a maximum of 4.5 units.
- Pro Forma required.
- The student must consult with the instructor about the area of study prior to registration.

**PSYC 503**  
**Units:** 4.0  
**Practicum in Clinical Psychology**  
Priced in a clinical setting, 1 unit of credit is equivalent to approximately 100 hours.

Prerequisite(s):
- Admission to a graduate program in Clinical Psychology, and
- permission of the department.

Graduation: INP, COM, N, F.

**PSYC 504**  
**Units:** 1.5-6.0  
**Individual Study**  
Notes:
- May be taken more than once for credit in different topics with permission of the department to a maximum of 6 units.
- Pro Forma required.

Prerequisite(s): Permission of the department.
PSYC 505 - PSYC 537

PSYC 505 Units: 4.0
Clinical Intervention Practicum
Practicum in a clinical setting with emphasis on various forms of intervention. 1 unit of credit is equivalent to approximately 100 hours.
Prerequisite(s):
• Admission to a graduate program in Clinical Psychology; and
• permission of the department.
Grading: INP, COM, N, F.

PSYC 506A Units: 1.5
Psychology Clinic Practice
Supervised psychological practice in the Psychology Clinic, Department of Psychology.
Note: May be taken more than once for credit in different topics.
Prerequisite(s):
• Admission to a graduate program in Clinical Psychology; and
• permission of the department.
Grading: INP, COM, N, F.

PSYC 506B Units: 1.5
Psychology Clinic Practice Test Mastery
Supervised test mastery in the Psychology Clinic, Department of Psychology.
Note: Credit will be granted for only one of PSYC 506B, PSYC 506.
Prerequisite(s):
• Admission to a graduate program in Clinical Psychology; and
• permission of the department.
Pre- or Corequisite(s): PSYC 545.
Grading: INP, COM, N, F.

PSYC 507 Units: 1.5
Personality
Notes:
• May be taken more than once for credit in different topics with permission of the department to a maximum of 6 units.
• The specific content area will be designated prior to registration.

PSYC 512 Units: 1.5-4.5
Research Practicum
Practicum in a research setting with emphasis on planning, conducting, analyzing, and/or writing up research results under the supervision of faculty.
Notes:
• May be taken more than once for credit in different topics.
• The student must consult with the proposed research supervisor about the content and nature of the research activity prior to registration and complete a Pro Forma. The content must differ from but may be related to 599 or 699.

PSYC 513 Units: 1.5-6.0
Quantitative Analysis
Topical seminars on specialized issues related to quantitative analysis.
Notes:
• May be taken more than once for credit in different topics with permission of the department to a maximum of 6 units.
• The specific content area will be designated prior to registration.

PSYC 517 Units: 1.5
Research Methods in Psychology
Notes:
• May be taken more than once for credit in different topics with permission of the department to a maximum of 6 units.
• The specific content area will be designated prior to registration.

PSYC 518 Units: 1.5
Psychometric Methods
Topics typically include: historical background, sample descriptive statistics, norm referencing, (e.g., percentiles, Z-scores, T-scores), criterion referencing, sensitivity specificity, classical true score test theory, item response theory (IRT), reliability, validity, standard errors, test development, standards for clinical tests, and assessment of reliable change.

PSYC 520 Units: 1.5
Survey of Social Psychology
In-depth examination of state-of-the-science theories and research in social psychology. Social thinking and social behaviour are explored through the study of individual processes (e.g., social cognition, motivation), interpersonal processes (e.g., social influence, helping, intimacy), and societal processes (e.g., group dynamics, intergroup relations, cultural and environmental influences). Emphasis is placed on the more recent advancements in social psychology and on the research interests and expertise of the instructor.

PSYC 521 Units: 1.5
Human Motivation
Seminar review of theory and research examining human motivation. Special topics include goals, intrinsic and extrinsic motivation, social and achievement motivation, self-efficacy, self-regulation, unconscious motivation, and growth motivation. Emphasis is placed on the social and cognitive perspective on motivation.

PSYC 526 Units: 1.5
Special Topics in Personality and Social Psychology
Topical seminars on specialized issues related to personality and social psychology.
Note: May be taken more than once for credit in different topics to a maximum of 6 units.

PSYC 527 Units: 1.5
Research Methods in Social Psychology
In-depth examination of state-of-the-science research methods in social psychology. The topics may include experimental and quasi-experimental research designs, survey research, cross-cultural and longitudinal methods, event-sampling methods, psychophysiological methods, implicit measure and priming techniques, content and narrative analysis, computer simulation, data analytical strategies, ethics. Emphasis is placed on the more recent advancements in research methods in social psychology and on the research interests and expertise of the instructor.

PSYC 530 Units: 1.5
The Social Self
Seminar review of theory and research examining current social psychological research and theory on the self. Special topics include self-concept, self-esteem, motivation and the self, and the self in close relationships. Emphasis is placed on the more recent advancement in social and personality psychology of the self.

PSYC 532 Units: 1.5
General Linear Model - Univariate
Presents a model-comparison approach to the analysis of a single dependent variable. Topics include simple and multiple regression involving continuous independent variables, categorical independent variables (ANOVA designs), and mixtures of the two (covariance analysis). Also covered will be logistic regression, data screening and outlier detection, testing of model assumptions, data transformation, and repeated measures models.

PSYC 533 Units: 1.5
General Linear Model - Multivariate
Topics generally include multivariate multiple regression, principle component and factor analysis, canonical correlation analysis, multivariate analysis of variance, discriminant function analysis and logistic regression.

PSYC 534 Units: 1.5
Univariate Design and Analysis
An examination of various factorial designs for univariate data from an advanced perspective. For a number of frequently used designs (e.g., completely randomized, randomized block, and repeated measures), planned comparisons, tests of the models’ assumptions, expected mean squares, and interpreting interactions (e.g., simple main effects) will be covered. Students will be required to learn and use statistical software packages, such as SPSS and SAS. Time and interest permitting, a brief introduction to other modelling procedures for response time and accuracy data will be offered.

PSYC 537 Units: 1.5
Multilevel Modeling
Provides an introduction to concepts and practical application of multilevel models for nested data structures, including experimental and longitudinal data.
Prerequisite(s): PSYC 532.
PSYC 540  Units: 1.5  
History and Theory in Neuropsychology  
Survey of major topics and issues in clinical and experimental neuropsychology, including a historical introduction and recent material. Topics may include aphasia, agnosia, apraxia, agraphia, other clinical syndromes, and hemispheric specialization.  
Note: Students who have completed an equivalent undergraduate human neuropsychology course may request permission to register in the course.  
Prerequisite(s):  
- PSYC 315; or  
- permission of the program.

PSYC 541  Units: 1.5  
Research Design and Methods in Neuropsychology  
Seminar on research methods and designs in studying brain/behaviour relationships, the strengths and limitations of various methods, and the populations and research questions for which they are used.

PSYC 543  Units: 1.5  
Behavioural Neuroanatomy  
Introduction to human neuroanatomy, neurophysiology and neurochemistry, with an emphasis on relationships between structure, function and behaviour.  
Prerequisite(s): Permission of the department.

PSYC 545  Units: 1.5  
Neuropsychological Assessment  
In depth examination of general approaches and models for neuropsychological assessment. This includes evaluation of multiple areas of cognitive functioning, including attention, memory, executive functions, language, perceptual skills and motor abilities. Test interpretation, case analysis, and report writing skills will also be emphasized.  
Prerequisite(s):  
- PSYC 544; and  
- admission to a graduate program in Clinical Psychology.

PSYC 546A  Units: 1.5  
Advanced Neuropsychology: Children and Adolescents  
In depth examination of typical neuodevelopment and associated acquired and neurodevelopmental disorders of children and adolescents, including a discussion of cognitive and behavioural profiles and techniques of neuropsychological assessment.  
Prerequisite(s):  
- All of PSYC 506B, PSYC 540, PSYC 545, PSYC 584; and  
- admission to a doctoral program in Clinical Psychology; and  
- permission of the department.  
Grading: INC, COM, N, F.

PSYC 546B  Units: 1.5  
Advanced Neuropsychology: Adults  
In depth examination of typical neuodevelopment and associated acquired and neurodegenerative disorders of adults, including a discussion of cognitive and behavioural profiles and the techniques of neuropsychological assessment.  
Prerequisite(s):  
- All of PSYC 506B, PSYC 540, PSYC 545, PSYC 584; and  
- admission to a doctoral program in Clinical Psychology; and  
- permission of the department.  
Grading: INC, COM, N, F.

PSYC 547  Units: 1.5  
Neuropsychological Intervention in Adults  
Introduction to theory and techniques associated with management of neurological disorders. Topics include the relationship between impairment, disability, and handicap, current techniques in cognitive rehabilitation, and interventions with individuals and families.  
Prerequisite(s): Permission of the department.  
Grading: INC, COM, N, F.

PSYC 548  Units: 1.5  
Special Topics in Neuropsychology  
Note: May be taken more than once for credit in different topics to a maximum of 6 units.

PSYC 549  Units: 1.5  
Neuropsychological Intervention in Children and Adolescents  
Introduction to theory, methods and techniques associated with management of neurological, neuropsychological and learning disorders in children and adolescents. Topics include the relationship among impairment, disability, and functional status, with current empirically-based approaches for remediation and/or compensation of cognitive and academic skill defects. Interventions will focus on individual children and families within both educational and social contexts.  
Note: Enrolment may be limited.  
Prerequisite(s):  
- Admission to a doctoral program; and  
- permission of the department.  
Grading: INC, COM, N, F.

PSYC 550 - PSYC 567 327

PSYC 551A  Units: 1.5  
Environmental Psychology of the Built Environment  
Seminar review of theory and research in the environmental psychology of the built environment. The topics may include social design of buildings, human behaviour as it is related to built environments, environmental perception and cognition, and person-environment transactions in residences, neighbourhoods, schools, workplaces, retail stores, and public spaces.  
Note: Credit will be granted for only one of PSYC 531 I, PSYC 555A.

PSYC 551B  Units: 1.5  
The Psychology of Nature, Sustainability, and Climate Change  
Seminar review of theory and research in the environmental psychology of natural world. The topics may include sustainability-related behaviour, psychological restoration from nature, resource management, sustainability, and the psychological aspects of climate change.  
Note: Credit will be granted for only one of PSYC 531 I, PSYC 551B.

PSYC 552  Units: 1.5  
Research Methods in Lifespan Psychology  
A critical examination of research designs and analytical approaches for understanding developmental and aging-related change and variation. Includes cross-sectional, longitudinal, sequential, experimental, and qualitative approaches.

PSYC 553A  Units: 1.5  
Advanced Analysis of Change and Variation  
The emphasis is the general linear mixed model for repeated measurements and other nested data structures. Both multilevel and structural equation models will be examined and applied to longitudinal data. Special topics include time invariant and time-varying covariates, evaluation of alternative time structures, change in factor-level outcomes and analysis of intensive repeated measures designs.  
Note: May be taken more than once for credit in different topics with permission of the department to a maximum of 3 units.  
Prerequisite(s):  
- PSYC 532 and PSYC 533; or  
- permission of the department.

PSYC 555A  Units: 1.5  
History and Theories in Lifespan Psychology  
Seminar review of major classical and contemporary theoretical perspectives and their implications for the study of psychological development across the lifespan. Emphasis on differences among theoretical perspectives with respect to central developmental issues such as concepts of change, sources of development, and the universality of developmental laws and findings.

PSYC 555B  Units: 1.5  
Infancy and Childhood  
Seminar review of theory and research examining psychological development from infancy through childhood. Special topics include personality/temperament, attachment, parent-child relations, and socialization process. Emphasis is placed on the role of the context in individual development.

PSYC 556  Units: 1.5  
Adult Development and Aging  
Seminar review of theory and research examining psychological processes during adulthood and aging. Specific topics include memory, intelligence, problem solving, personality, social processes, and mental health. Attention is also given to the biological and sociocultural contexts of these developments.

PSYC 557  Units: 1.5  
Dysfunctional Development in Adulthood and Aging  
Seminar review of theory and research examining dysfunctional and pathological processes in later life. Specific topics include dementia, depression, personality disorders, alcoholism and other addictions and suicide. Attention will be given to issues of etiology, diagnosis, treatment, and impact on caregivers.
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<th>Course</th>
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| **PSYC 568** | 1.5 | Units: 1.5  
Adolescence  
Seminar review of theory and research examining psychological processes during adolescence. Specific topics include pubertal maturation, parent-adolescent relations, gender roles, sexuality, and problem behaviour. Attention will be given to the role of the context (e.g., family, school) in adolescent development. |
| **PSYC 569** | 1.5 | Units: 1.5  
Formerly: PSYC 562  
Special Topics in Lifespan Development  
Topical seminars on specialized issues related to lifespan development and aging.  
Note: May be taken more than once for credit in different topics to a maximum of 6 units. |
| **PSYC 570** | 1.5 or 3.0 | Units: 1.5 or 3.0  
Also: LING 570  
Psycholinguistics  
A seminar offered in collaboration with the department of Linguistics. Selected topics of interest in understanding the comprehension and production of natural language are examined. The most recent topics have been sentence processing, discourse analysis, linguistic inference and the resolution of ambiguity, and the development of cognitive science interests in reasoning and discourse processes as well as the structure of mental representations. |
| **PSYC 574A** | 1.5 | Units: 1.5  
Cognitive Methods: Electroencephalography and Event-related Brain Potentials  
An intensive, hands-on introduction to the basics of collecting and analyzing event-related brain potential (ERP) data.  
Notes:  
• Credit will be granted for only one of PSYC 574A, PSYC 574 (if taken in the same topic), PSYC 576C (if taken in the same topic).  
• Enrolment is limited to 5 students.  
Prerequisite(s): Permission of the department. |
| **PSYC 574B** | 1.5 | Units: 1.5  
Cognitive Methods: Functional Magnetic Resonance Imaging  
Introduction to theory and methods of functional magnetic resonance imaging (fMRI) for the study of mind and brain using lectures, discussions and hands-on lab exercises. Includes underlying physics and physiology, experimental design, data collection and preprocessing, statistical analysis, and various advanced methods.  
Notes:  
• Credit will be granted for only one of PSYC 574A, PSYC 574 (if taken in the same topic), PSYC 576C (if taken in the same topic). |
| **PSYC 574C** | 1.5 | Units: 1.5  
Cognitive Methods: Computational Modelling  
Exploration of methods of computational modelling of cognitive processes. Methods covered may include mathematical models, symbolic models, and neural network models. Theoretical foundations, procedures for fitting models, and applications to cognitive psychology and cognitive neuroscience will be considered.  
Notes:  
• Credit will be granted for only one of PSYC 574C, PSYC 576B (if taken in the same topic). |
| **PSYC 574D** | 1.5 | Units: 1.5  
Cognitive Processes: Human Memory  
Exploration of current theories and research on selected aspects of human memory. One or more major topics within the domain of human memory will be studied in depth.  
Note: May be taken more than once for credit in different topics to a maximum of 6 units. |
| **PSYC 575A** | 1.5 | Units: 1.5  
Cognitive Processes: Cognitive Control  
Exploration of selected theories and research in cognitive psychology and/or the cognitive neuroscience of cognitive control. One or more major topics within the domain of cognitive control (e.g. working memory, attention, error detection, conflict monitoring, response inhibition, and/or decision making) will be studied in depth.  
Note: May be taken more than once for credit in different topics with permission of department to a maximum of 6 units. |
| **PSYC 575E** | 1.5 | Units: 1.5  
Cognitive Processes: Visual Perception  
Exploration of current theories and research on selected aspects of visual perception. One or more major topics (e.g., object recognition, Gestalt perception, neuropsychology of visual perception) will be studied in depth.  
Notes:  
• Credit will be granted for only one of PSYC 575E, PSYC 511 (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of department to a maximum of 6 units. |
| **PSYC 575F** | 1.5 | Units: 1.5  
Psychopharmacology  
Exploration of selected theories and research on selected aspects of drug action and their effects on behavior. Topics include the role of neurotransmitters in the control of behavior, the psychological effects of drugs, and the effects of drugs on behavior.  
Notes:  
• Credit will be granted for only one of PSYC 575F, PSYC 511 (if taken in the same topic).  
• May be taken more than once for credit in different topics with permission of department to a maximum of 6 units. |
| **PSYC 575G** | 1.5 | Units: 1.5  
Psychopathology: Childhood and Adolescence  
Discussion of conceptual models used to understand psychopathology; presentation of various mental disorders from multiple theoretical perspectives; discussion of diagnostic issues emphasizing the impact of gender and culture in the expression of “abnormal” behaviour. Emphasis on disorders that emerge during childhood and adolescence. Topics are considered from a scientist-practitioner perspective. Includes discussion of relevant professional issues in clinical psychology.  
Prerequisite(s): Admission to a graduate program in Clinical Psychology. |
| **PSYC 575H** | 1.5 | Units: 1.5  
Psychopathology: Adulthood  
Draws on models for understanding psychopathology developed in PSYC 581. Discussion of conceptual models used to understand psychopathology; presentation of various mental disorders from multiple theoretical perspectives; discussion of diagnostic issues emphasizing the impact of gender and culture in the expression of “abnormal” behaviour. Emphasis is on disorders that emerge during adulthood. Topics are considered from a scientist-practitioner perspective. Includes discussion of relevant professional issues in clinical psychology.  
Prerequisite(s):  
• PSYC 581; and  
• admission to a graduate program in Clinical Psychology. |
| **PSYC 575I** | 1.5 | Units: 1.5  
Psychopathology: Professional and Ethical Issues in Clinical Psychology  
Discussion of ethical standards for providers of psychological services and of registration requirements as required by BCPA, CPA and APA. Presentations by practising psychologists related to professional and interprofessional problems encountered in practice.  
Note: Enrolment may be limited.  
Prerequisite(s):  
• Admission to a graduate program in Clinical Psychology; and  
• permission of the department. |
| **PSYC 575J** | 1.5 | Units: 1.5  
Clinical Assessment: Cognitive Functioning  
Introduction to theory and practice in the assessment of cognitive functioning and academic achievement, including test administration, scoring, interpretation, and report writing. Test administration proficiency and individual case study interpretation are required during formal laboratory experiences.  
Prerequisite(s): Admission to a graduate program in Clinical Psychology.  
Grading: INC, COM, N, F. |
| **PSYC 575K** | 1.5 | Units: 1.5  
Clinical Assessment: Psychosocial Functioning  
Introduction to theory and practice in the psychological assessment of social, emotional and personality functioning.  
Prerequisite(s): Admission to a graduate program in Clinical Psychology.  
Grading: INC, COM, N, F. |
PSYC 586A  Units: 1.5
Advanced Clinical Assessment
Advanced theory and professional issues in the psychological assessment of social, emotional and personality functioning.
Note: Enrolment may be limited.
Prerequisite(s):
- PSYC 585; and
- admission to a graduate program in Clinical Psychology; and
- permission of the department.
Grading: INC, COM, N, F.

PSYC 586B  Units: 1.5
Practice in Advanced Clinical Assessment
Supervised practice in the psychological assessment of social, emotional and personality functioning.
Note: Enrolment may be limited.
Prerequisite(s):
- PSYC 585; and
- admission to a graduate program in Clinical Psychology; and
- permission of the department.
Pre- or Corequisite(s): PSYC 586A.
Grading: INC, COM, N, F.

PSYC 588  Units: 1.5
Child and Adolescent Therapy
Introduction to different theoretical approaches to child psychotherapy and a discussion of techniques; supervised experience will be offered in subsequent sections.
Note:
- May be taken more than once for credit in different topics to a maximum of 4.5 units.
- Enrolment may be limited.
Prerequisite(s):
- Admission to a graduate program in Clinical Psychology; and
- permission of the department.
Grading: INC, COM, N, F.

PSYC 589  Units: 1.5
Introduction to Evidence-Based Adult Psychotherapies
Overview of theory, research, and practice in adult psychotherapy. Introduction to the major schools of psychotherapy and to the common factors present across forms of psychotherapy. Beginning therapy skills will be developed through role play and experiential exercises. Supervised experience is offered in 590.
Prerequisite(s): Admission to a graduate program in Clinical Psychology.

PSYC 590  Units: 1.5
Practical Issues and Challenges in Adult Psychotherapy
An advanced psychotherapy course that builds upon the introductory therapy skills developed in 589. Includes didactic seminar and group case consultation.
Note: Enrolment may be limited.
Prerequisite(s):
- PSYC 589; and
- admission to a doctoral program in Clinical Psychology; and
- permission of the department.
Grading: INC, COM, N, F.

PSYC 591  Units: 1.5
Special Topics in Clinical Psychology
Note: May be taken more than once for credit in different topics to a maximum of 6 units.
Prerequisite(s): Admission to a graduate program in Clinical Psychology.

PSYC 593  Units: 1.5
Family Interventions
Introduction to various theoretical approaches to family interventions. Specific techniques are explored through readings, discussions, assignments, and role-plays.
Note: Enrolment may be limited.
Prerequisite(s):
- PSYC 589; and
- admission to a doctoral program in Clinical Psychology; and
- permission of the department.
Grading: INC, COM, N, F.

PSYC 594  Units: 1.5
Special Topics in Clinical Intervention
Introduction to any one or more specialized therapeutic techniques for working with individuals in clinical settings.
Note: May be taken more than once for credit in different topics to a maximum of 6 units.
Prerequisite(s): Admission to a graduate program in Clinical Psychology.
Grading: INC, COM, N, F.

PSYC 595  Units: 1.5
Cognitive Behavioural Therapy
An advanced psychotherapy course that provides students with an understanding of the theory and clinical skills associated with Cognitive-Behavioural Therapy. Theory and specific techniques are explored through readings, class discussion, class assignments and role-plays.
Note: Credit will be granted for only one of PSYC 595, PSYC 594 (if taken in the same topic).
Prerequisite(s):
- PSYC 589; and
- admission to a doctoral program in Clinical Psychology.
Grading: INC, COM, N, F.

PSYC 596  Units: 1.5
Interpersonal Therapies
An advanced psychotherapy course that provides students with an understanding of the theoretical underpinnings of the major interpersonal therapies and the role of interpersonal process in therapy in general. Specific theories and techniques are explored through readings, class discussion and class assignments.
Note: Credit will be granted for only one of PSYC 596, PSYC 594 (if taken in the same topic).
Prerequisite(s):
- PSYC 589; and
- admission to a doctoral program in Clinical Psychology.
Grading: INC, COM, N, F.

PSYC 597  Units: 1.5
Clinical Psychology Colloquium
Weekly colloquium through the Winter session, involving faculty and graduate students in the Clinical Psychology Program. Colloquium participants take turns hosting the meeting, typically presenting on current clinical practice issues, cases, or research.
Note: May be taken more than once for credit to a maximum of 7.5 units.
Prerequisite(s): Admission to a graduate program in Clinical Psychology.
Grading: INC, COM, N, F.

PSYC 599  Units: 6.0
Thesis
Grading: INC, COM, N, F.

PSYC 602  Units: 1.0-6.0
Independent Research
Notes:
- May be taken more than once for credit in different topics.
- Pro Forma required.
- The student must consult with the instructor about the area of study prior to registration.
- A maximum of 6 units of 602 may be taken in any one Winter Session at the discretion of the student's Supervisory Committee.
Prerequisite(s): Permission of the department.

PSYC 603  Units: 4.0
Advanced Clinical Practicum
Practicum in an approved clinical setting. 1 unit of credit is equivalent to approximately 100 hours.
Prerequisite(s):
- Admission to a graduate program in Clinical Psychology; and
- permission of the department.
Grading: INC, COM, N, F.

PSYC 604  Units: 1.5-6.0
Individual Study
Notes:
- May be taken more than once for credit in different topics.
- Pro Forma required.
- The student must consult with the instructor about the area of study prior to registration.
- A maximum of 6 units of 604 may be taken in any one Winter Session at the discretion of the student’s Supervisory Committee.
Prerequisite(s): Permission of the department.

PSYC 605  Units: 1.5 or 3.0
Practicum in the Teaching of Psychology
Teaching practicum with individual instructors of the department in areas of potential teaching interest for the student.
Note: Pro Forma required.
Grading: INC, COM, N, F.
PSYC 606 - SDH 699

**PSYC 606**  
Units: 15.0  
**Clinical Internship**  
Full-year internship with 1600 to 2000 hours of supervised practical experience in settings approved by the committee on clinical training.  
**Note:** Students who have completed a clinical course sequence may request permission to register in the course.  
**Prerequisite(s):** Permission of the department.  
**Grading:** INP, COM, N, F.

**PSYC 612**  
Units: 1.5-4.5  
**Advanced Research Practicum**  
Advanced practicum in research with an emphasis on coordination of a program of research in association with a faculty supervisor. Typically involves organization and training of research assistants, developing research protocols, management of research databases, statistical analysis, and preparation and submission of materials for publication as specified in a Pro Forma.  
**Grading:** INP, COM, N, F.

**PSYC 693**  
Units: 3.0  
**PhD Candidacy Examinations**  
Students enrol in PSYC 693 while they prepare for and complete their doctoral candidacy examinations. This begins at the time a student first enrols in the PhD program and continues until all candidacy examination requirements have been successfully completed. Students have 36 months from the time of first registration in the doctoral program to complete the exams. Students registered in 693 must also be registered in 693 concurrently until 693 is complete.  
**Grading:** INP, COM, N, F.

**PSYC 699**  
Units: 15.0-30.0  
**PhD Dissertation**  
Pre- or Corequisite(s): PSYC 693.  
**Grading:** INP, COM, N, F.

**SDH**  
**Social Dimensions of Health**  
**Social Dimensions of Health Program**  
**Faculty of Social Sciences**  
These courses are offered in collaboration with the Faculties of Humanities, Education and Human and Social Development.

**SDH 500A**  
Units: 1.5  
**Interdisciplinary Perspectives on Health Research**  
Provides an overview of various health research paradigms. Covers fundamental theories, models, frameworks and topics that form the basis of interdisciplinary health research including: epidemiology, ethics, policy, health and wellness, chronic disease and the relationship between culture and health including Indigenous peoples. Coursework may include group discussion, academic writing, presentations and a critical review of the literature. Topics are centred on interdisciplin ary health research and provide core competencies for developing independent research.

**SDH 500B**  
Units: 1.5  
**Interdisciplinary Methods Applied to Health Research**  
Provides an overview of qualitative, quantitative and mixed research methods employed in interdisciplinary research studies. Introduces students to research methods such as epidemiology, grounded theory, ethnography, case studies, surveys, experimental studies, secondary analyses of existing datasets and Indigenous methodologies. Course work may include proposal writing, presentations, and developing community partnerships. Methods are core to conducting - health research and preparing independent research.  
**Prerequisite(s):**  
- SDH 500A; or  
- permission of the program.

**SDH 501A**  
Units: 1.5  
**Social Dimensions of Health Perspectives Colloquium I**  
Exposes students to a range of health research paradigms, theories and frameworks in the context of health research studies and research programs. Introduces students to dimensions of research such as stakeholder engagement, community engagement and ethical consultation in studying urban, rural, minority, immigrant, and Indigenous groups. Students present on and present about their research interests.  
**Grading:** INP, COM, N, F.

**SDH 501B**  
Units: 1.5  
**Social Dimensions of Health Methods Colloquium II**  
Exposes students to a range of research methods in the context of health research studies and research programs. Introduces students to dimensions of research such as stakeholder engagement, community engagement and ethical consultation in studying urban, rural, global and Indigenous settings. Students present on their own research interests.  
**Prerequisite(s):**  
- SDH 501A; or  
- permission of the program.  
**Grading:** INP, COM, N, F.

**SDH 590**  
Units: 1.5  
**Directed Studies in the Social Dimensions of Health**  
Directed Studies or project under the supervision of a faculty member.  
**Notes:**  
- May be taken more than once for credit in different topics.  
- The content must differ from but may be related to 699.  
**Grading:** INP, COM, N, F.

**SDH 599**  
Units: 6.0  
**Thesis**  
**Grading:** INP, COM, N, F.

**SDH 600A**  
Units: 1.5  
**Interdisciplinary Perspectives on Health Research**  
Provides an overview of various health research paradigms. Covers fundamental theories, models, frameworks and topics that form the basis of interdisciplinary health research including: epidemiology, ethics, policy, health and wellness, chronic disease and the relationship between culture and health including Indigenous peoples. Coursework may include group discussion, academic writing, presentations, and a critical review of the literature. Topics are central to interdisciplinary health research and provide core competencies for developing independent research.

**SDH 600B**  
Units: 1.5  
**Interdisciplinary Methods Applied to Health Research**  
Provides an overview of qualitative, quantitative and mixed research methods employed in various research studies. Introduces students to research methods such as epidemiology, grounded theory, ethnography, case studies, surveys, experimental studies, secondary analysis of existing datasets and Indigenous methodologies. Course work may include proposal writing, presentations and developing community partnerships. Methods are core to conducting - health research and preparing independent research.  
**Prerequisite(s):**  
- SDH 600A; or  
- permission of the program.

**SDH 601A**  
Units: 1.5  
**Social Dimensions of Health Perspectives Colloquium I**  
Exposes students to a range of health research paradigms, theories and frameworks in the context of health research studies and research programs. Introduces students to dimensions of research such as stakeholder engagement, community engagement and ethical consultation in studying urban, rural, minority, immigrant, and Indigenous groups. Students present on and present about their research interests.  
**Grading:** INP, COM, N, F.

**SDH 601B**  
Units: 1.5  
**Social Dimensions of Health Methods Colloquium II**  
Exposes students to a range of research methods in the context of health research studies and research programs. Introduces students to dimensions of research such as stakeholder engagement, community engagement and ethical consultation in studying urban, rural, global and Indigenous settings. Students present on their own research interests.  
**Prerequisite(s):**  
- SDH 601A; or  
- permission of the program.  
**Grading:** INP, COM, N, F.

**SDH 690**  
Units: 1.5  
**Directed Studies in the Social Dimensions of Health**  
Directed Studies or project under the supervision of a faculty member.  
**Notes:**  
- May be taken more than once for credit in different topics.  
- Pro Forma required.  
**Grading:** INP, COM, N, F.

**SDH 693**  
Units: 3.0  
**Candidacy Exam**  
Three questions related to their particular research area will be crafted by the student in consultation with their supervisory committee. The questions will be answered in a written format, drawing upon pertinent literature and will be evaluated on a pass/fail basis.  
**Grading:** INP, COM, N, F.

**SDH 699**  
Units: 15.0  
**Dissertation**  
**Grading:** INP, COM, N, F.
SLST

Slavic Studies
Department of Germanic and Slavic Studies
Faculty of Humanities

SLST 501  Units: 1.5
Also: GMST 501
Introduction to the Disciplines of Germanic and Slavic Studies
An introduction to the research specialties that make up Germanic and Slavic Studies: literary and cultural studies, film studies, cultural history and second language acquisition. May include sessions on how to write a research grant proposal, do sophisticated library research, prepare a bibliography and write a thesis proposal.
Note: Credit will be granted for only one of SLST 501, GER 501, GMST 501.

SLST 502  Units: 1.5
Also: GMST 502
Theory and Practice
Introduces students to the theories and methodologies that animate the disciplines of Germanic and Slavic studies and may include topics such as professional skills, pedagogy and thesis writing.
Note: Credit will be granted for only one of SLST 502, GMST 502.

SLST 503  Units: 1.5
Also: GMST 503
Teaching in the Disciplines of Germanic and Slavic Studies
A practice-based introduction to course design, teaching strategies, methodologies and assessment tools in the teaching areas of Germanic and Slavic Studies.
Note: Credit will be granted for only one of SLST 503, GMST 503.

SLST 505  Units: 1.5
Advanced Russian Language Study
Research topics may include Russian morphology, phonetics, lexicology, and language acquisition.

SLST 509  Units: 1.5
Also: GMST 509
Special Topics Field School
Exploration of cultural studies topics in European, German-speaking or Slavic countries. Promotes intercultural and experiential learning through joint workshops with European students and field research working at relevant cultural sites and with relevant artefacts. Topics vary.
Note: May be taken more than once credit in a different topic.

SLST 511  Units: 1.5
Studies in Film
A critical analysis and study of films of the 20th and 21st century by Slavic and East European filmmakers.

SLST 521  Units: 1.5
Studies in Russian Literature and Culture
Examination of literary works and cultural processes in Russian and/or Soviet society.

SLST 522  Units: 1.5
Studies in Ukrainian Literature and Culture
Examination of literary works and cultural processes in Ukraine.

SLST 523  Units: 1.5
Studies in Slavic Cultural History
A cultural studies approach to texts, films, performances, media and material objects and spaces in Slavic and East European nations.

SLST 560  Units: 1.5
Slavic-Canadian Studies
Examination of the culture of Slavic and East European diasporas in Canada, as well as their impact on the creative processes in their home countries.

SLST 565  Units: 1.5
Seminar on Bakhtin
An interdisciplinary approach focusing on the major works and central concepts of the Russian philosopher and literary theorist Mikhail Bakhtin, as well as the application of these theories in diverse disciplines of study.

SLST 570  Units: 1.5
Also: GMST 570
Studies in New Media in Second Language Acquisition
Critical examination of the current research on teaching a foreign language. Focus on learning and teaching outside of the language environment, foreign language learning theories, teaching methodologies and practices.
Note: Credit will be granted for only one of SLST 570, GMST 570.

SLST 581  Units: 1.5
Twentieth-Century Genocides in Eastern Europe
Examines the common and unique features of genocides, ethnic cleansings, and forced population transfers in twentieth-century Eastern Europe including the Ukrainian Famine, the Holocaust, and the Bosnian War.

SLST 590  Units: 1.5
Directed Studies in Slavic Studies I
Notes:
• May be taken more than once credit to a maximum of 4.5 units.
• Pro Forma required.

SLST 591  Units: 1.5
Directed Studies in Slavic Studies II
Notes:
• May be taken more than once credit to a maximum of 4.5 units.
• Pro Forma required.

SLST 599  Units: 6.0-9.0
Thesis
Grading: INP, COM, N, F.

SOCI

Sociology
Department of Sociology
Faculty of Social Sciences

SOCI 503  Units: 1.5
Foundations of Sociological Explanations
In-depth examination of selected key themes in sociological theory. Traces the development of sociological theorizing from the work of classical 19th-century thinkers up until recent decades. Provides expert understanding of the historical and theoretical concerns that have shaped sociology through conceptual engagement with the literature.

SOCI 504  Units: 1.5
Current Issues in Social Theory
Examines major perspectives, themes, and debates in contemporary social theory. Emphasis on developing students’ abilities to use theoretical concepts in relation to their own research interests.
Note: Credit will be granted for only one of SOCI 501, SOCI 502.

SOCI 505  Units: 1.5
Intermediate Social Statistics
Statistical methods appropriate for quantitative sociological research, with an emphasis on regression models and their extensions and computer applications for these models.
Notes:
• Credit will be granted for only one of SOCI 507, SOCI 471, SOCI 371B (if taken prior to May 2011).
• A combined undergraduate and graduate course (SOCI 471).
Prerequisite(s):
• SOCI 271, or
• permission of the department.

SOCI 515  Units: 1.5
Qualitative Research
Key issues and methods in the systematic study of the social world through qualitative sociological research. Examination of the relationship between analytical perspective and methodological decisions, methods of gathering data and analysis. Includes issues of language, representation, politics, social organization and participation.
Prerequisite(s):
• SOCI 374, or
• permission of the department.

SOCI 520  Units: 1.5
Formerly: SOCI 610
Issues in Contemporary Sociology
A seminar exploring a topic of contemporary interest in sociology. Content is informed by faculty members’ current research and varies from year to year.
Note: Credit will be granted for only one of SOCI 520, SOCI 610 (if taken in the same topic).

SOCI 525  Units: 1.5
Current Issues in the Sociology of Genders and Sexualities
A seminar exploring a range of contemporary issues pertaining to genders, sexualities, and bodies. Content is informed by faculty members’ current research and varies from year to year.
SOCI 535  Units: 1.5  
Current Issues in Political Sociology  
A seminar exploring a range of contemporary issues pertaining to politics, movements, the state, and social and political change. Content is informed by faculty members’ current research and varies from year to year.

SOCI 545  Units: 1.5  
Current Issues in the Sociology of Health and Aging  
A seminar exploring a range of contemporary issues pertaining to the social determinants of health, illness, and aging. Content is informed by faculty members’ current research and varies from year to year.

SOCI 590  Units: 1.5  
Directed Studies  
Note: May be taken more than once for credit to a maximum of 3 units.  
Prerequisite(s): Permission of the department.

SOCI 598  Units: 4.5  
Major Research Paper  
A piece of independent research work involving substantial analytical engagement with a defined area of sociology guided by one or more research questions.  
Note: Normally, students are expected to complete two terms of coursework prior to registration.  
Grading: INP, COM, N, F.

SOCI 599  Units: 7.5  
Thesis  
Note: Students who wish to register for the thesis must request permission to do so no later than 12 months after entering the MA program.  
Prerequisite(s): Permission of the department.  
Grading: INP, COM, N, F.

SOCI 608  Units: 1.5  
Formerly: SOCI 508  
Advanced Statistical Analysis  
Advanced statistical models with applications to sociological research, which may include such topics as logistic models, count models, multilevel models, structural equation models, and models for longitudinal data. Also includes the use of computer statistical software for the analysis of data.  
Notes:  
• Credit will be granted for only one of SOCI 608, SOCI 508, SOCI 472, SOCI 501.  
• Normally offered in alternate years.  
Prerequisite(s):  
• SOCI 507; or  
• permission of the department.

SOCI 616  Units: 1.5  
Advanced Strategies in Qualitative Research  
Explores applied techniques for coding and systematically analyzing qualitative data with the assistance of computer-aided qualitative data analysis software (CAQDAS). Examines different strategies for communicating qualitative research findings to other researchers and the general public.  
Note: Normally offered in alternate years.  
Prerequisite(s):  
• SOCI 515; or  
• permission of the department.

SOCI 690  Units: 1.5  
Directed Studies  
Note: May be taken more than once for credit to a maximum of 3 units.

SOCI 693  Units: 3.0  
PhD Candidacy Examinations  
Students enrol in SOCI 693 for the duration of their preparation for their candidacy examinations. This begins at the time a student first enrols in the PhD program and continues until candidacy requirements have been completed. Students are expected to complete all required coursework and comprehensive exams within 25 months after entering the PhD program.  
Grading: INP, COM, N, F.

SOCW 501, SOCW 518  

SOCW 505  Units: 1.5  
Advanced Child Welfare Seminar  
Explores topics of special interest in the development of child welfare practice from a critical, anti-oppressive and social justice perspective. Students are expected to conduct an analysis on a current child welfare topic they select in conjunction with the instructor.  
Notes:  
• Credit will be granted for only one of SOCW 505, SOCW 525.  
• Offered as resources permit.

SOCW 506  Units: 4.5  
Advanced Practicum  
A minimum of 450 hours of advanced social work practice and demonstration of the application of critical analysis to practice are required. Faculty of Human and Social Development regulations concerning practica apply to the MSW practicum.  
Prerequisite(s):  
• 6 units of core course requirements; and  
• admission to MSW Advanced program.  
Grading: INP, COM, N, F.

SOCW 506A  Units: 4.5  
MSWI Practicum  
A minimum of 450 hours of social work practice and demonstration of the application of critical analysis to practice are required. Faculty of Human and Social Development regulations concerning practica apply to the MSWI practicum.  
Prerequisite(s):  
• 6 units of core course requirements; and  
• admission to MSW Indigenous Specialization.  
Grading: INP, COM, N, F.

SOCW 510  Units: 1.5  
Also: SPP 510  
Policy Context of Practice  
Reviews and analyzes a number of explanations of the policy making process. Examines who makes policy in both governmental and voluntary human service organizations and the impact of policy on consumers and practitioners. Analyzes the policy/practice interface and uses substantive policy domains to illustrate how policy both enhances and constrains practice and how practice in turn can influence policy. Students are encouraged to develop their own understandings of the contributions of practice to policy.  
Note: Credit will be granted for only one of SOCW 510, SPP 510, HSD 510.  
Prerequisite(s): Admission to MSW Advanced program.

SOCW 511  Units: 1.5  
Contemporary Debates and Ethical Dilemmas in Social Work  
Examines and critiques current debates, ideas and discourses relating to social work knowledge and practice, with a specific focus on ethics. Emphasis is placed on postmodern, feminist, anti-racist and Indigenous perspectives as they challenge prevailing assumptions about individualism, meritocracy, professionalism and philanthropy. Specifically looks at the contributions of these perspectives to a critical theorizing of professional practice and ethics.  
Note: Credit will be granted for only one of SOCW 511, SOCW 501, SOCW 518.

SOCW 512  Units: 1.5  
Knowledge and Inquiry: Re-Theorizing Social Work  
Takes as its starting point the idea that responsible and effective professional and scholarly practice begins with a critical examination of how relations of power shape knowledge production. Over the term, assumptions underlying the creation of knowledge and different approaches to knowing authoritatively will be investigated. Questions of ‘how we come to know’ and ‘how we go about asking’ are explored through poststructural, postcolonial and critical race lenses.  
Note: Credit will be granted for only one of SOCW 512, SPP 502, HSD 502.  
Prerequisite(s): Admission to MSW Advanced program.

SOCW 515  Units: 1.5  
Transnational Social Work  
Transnational feminist theorists argue that transnationalism links contemporary notions of nationality, gender, race and class to earlier histories of colonization and present day imperialism. Students examine the practices of the securitized, neo-liberal Canadian welfare state towards transnational communities by: (a) understanding transnational feminist theories, (b) analyzing nation-making and global inequality, (c) reviewing practices of transnational feminist social justice activism, and (d) critiquing international social work in view of all of the above.
### SOCW 516  Units: 1.5
**Also:** SPP 516

**Research Methodologies**
Critically reviews a wide range of research methodologies commonly practised in the human services. Considers the kinds of opportunities and challenges presented by each methodology. Emphasizes the link between the development of a research question and the selection of methodological approaches.

**Note:** Credit will be granted for only one of SOCW 516, SPP 516, HSD 516.

**Prerequisite(s):** Admission to MSW Advanced program.

### SOCW 517  Units: 1.5

**Research Seminar**
Focuses on specific methodological, analytical and/or theoretical aspects of research for the thesis. Is intended to support graduate students in the thesis research and writing that they undertake following the completion of their coursework. Content varies from year to year, depending on students’ interests and needs.

**Notes:**
- Students who are completing a thesis may request permission to register in the course.
- Registration in SOCW 517 is normally continued until the student’s thesis proposal has been approved by the supervisory committee.

**Prerequisite(s):**
- SOCW 516; and
- permission of the program.

**Grading:** INP, COM, N, F.

### SOCW 519  Units: 1.5

**Indigenous Resistance, Resurgence And Revitalization For Helpers**
Introduces contemporary examples of Indigenous resistance, resurgence and revitalization from local, national and international contexts. Critically examines the implications for social work practice with an emphasis on Indigenous and de-colonial thought and collective action. Students explore their self-location, ideas, values and beliefs relating to practice with Indigenous peoples and practice informed by Indigenous knowledge.

### SOCW 520  Units: 1.5

**Indigenous Perspectives on Knowledge and Research**
Explores the dimensions of Indigenous ways of knowing that influence research activities in Indigenous communities. Students will explore how, and from where, their own knowing emerges as well as critically examine how knowledge is constructed within larger society. Focuses on how power, culture, ethics, protocols, language, place and spirit shape knowledge.

### SOCW 522  Units: 1.5

**Self-Conscious Traditionalism in Indigenous Social Work Practice Seminar**
Critical exploration of alternative models of Indigenous social work practice drawn from the literature and from their own practice. Concepts and skills of Indigenous leadership are also explored.

### SOCW 526  Units: 1.5

**Seminar in Health Policy and Practice in Indigenous Communities**
Examination of critical issues in community health such as sexual abuse, substance misuse and family violence as well as the collective steps that Indigenous (and other) communities have taken to restore health. The critical issues to be examined are determined collectively by students and faculty.

### SOCW 531  Units: 1.5

**Critical Exploration of Leadership Roles for Social Workers in Health Care**
Inquiry based opportunity for students to critically examine their leadership styles and develop a foundational knowledge and skill base for effective involvement in organizational change, staff management, coaching and supervision, coordination of inter-professional teams and development of policies to address the social determinants of health.

**Note:** Offered as resources permit.

### SOCW 532  Units: 1.5

**Introduction to Social Work in the Health Care Sector**
Examines the knowledge and skills required for social workers to be effective advocates while carrying out a range of responsibilities in the health sector within the context of a practice framework that focuses on the social determinants of health. The challenges and opportunities provided by the cultural and organizational contexts of practice in health care will be an important focus of the course for examining the inter-professional nature of practice. Particular aspects of practice such as appropriate documentation, informed consent and community development will be included.

**Note:** Offered as resources permit.

### SOCW 533  Units: 1.5

**Working with Trauma**
Current theories and practices regarding the neurobiological, psychophysical and socio-cultural components of trauma. Four dimensions of experience will be explored: shock, developmental, accumulated stress, and socially and culturally-produced traumatic stress. Emphasis will be placed on concrete skills and strategies that have applicability to a wide variety of contexts. As well, students will learn to reduce the prevalence of secondary traumatization on themselves, colleagues, agencies and communities.

**Note:** Credit will be granted for only one of SOCW 533, 533, SOCW 580 (if taken in the same topic).

### SOCW 537  Units: 1.5

**Environmental Justice and Social Work**
Environmentalism has gained prominence in social work scholarship and earlier practice models that ignored the physical environment are now critiqued. Students enter with political allegiance to green issues; educators find compatibility between professional practice and views on spirituality, environmental justice, and social service provision. Fears over environmental destruction and a general sense of disconnection from nature are finding traction. Students will explore these themes through the lenses of race, space, and environmental justice.

### SOCW 540  Units: 4.5

**Foundation Practicum**
A minimum of 450 hours of social work practice and demonstration of the application of critical analysis to practice are required. Faculty of Human and Social Development regulations concerning practice apply to the MSW practicum.

**Prerequisite(s):**
- SOCW 541; and
- 3 units of SOCW (Foundation program core) courses.

**Pre- or Corequisite(s):** SOCW 546.

**Grading:** INP, COM, N, F.

### SOCW 542  Units: 1.5

**Anti-Racist Practice**
Introduces students to anti-racist, de-colonial and insurgent social work knowledge and practice. Grounded in and informed by community activism and social movements with particular attention to the knowledge of Indigenous and racialized peoples whose contributions are often erased in the history, teaching and practice of social work. Students gain foundational understanding of various collective and individual strategies, approaches and skills, to facilitate the integration of critical theory and activist epistemologies into applied practice.

**Note:** Credit will be granted for only one of SOCW 542, SOCW 541, SOCW 546.

### SOCW 543  Units: 1.5

**Theorizing Social Difference**
How do we come to know who we are and how is this knowledge raced, embodied, engendered and embedded in a material context? These questions underpin social work knowledge and practice. Developing an analysis of social difference is a crucial skill for social workers. In this course students will be introduced to the concepts of marginalization and dominance as they play out in (primarily) North American contexts. The course will look at social work theories and knowledge as a departure point from which to explore interdisciplinary theorizations of concepts core to the profession.

### SOCW 544  Units: 1.5

**Social Work, the State and Citizenship**
Taking the perspective of citizenship as social”, explores the lived realities and experiences of citizenship as it is configured on the basis of geography, class, race, Indigeneity, gender, sexual orientation and other identity locations. Using citizenship theories, explores the nature of social inclusion and exclusion that mark citizens’ lives in the Canadian Welfare state and examines the de-colonizing potential of citizenship-based social work that is grounded in a vision of social justice.

### SOCW 545  Units: 1.5

**Networks and Communities**
Social work practice within communities and social networks. Definitions of community are explored as experienced and conceptualized from various locations. Critical historical and theoretical analysis and ethical dilemmas posed by various approaches to community work are examined. Students have the opportunity to develop theoretical and practical understandings of anti-oppressive, antiracist and anti-colonial community practice as experiences within their own communities.
SOCW 547 - Units: 1.5
Historicizing Social Work
Critical examination of the production of social work practice and theories at different historical moments and the profession's role in regulation of the boundaries between proper citizen-subject and deviant Others, all while participating in the colonial project of making nation. Students engage in critical reflective study of social work responses to so-called 'problem populations' in the context of changing political, social, economic and moral climates.

SOCW 549 - Units: 1.5
Research Foundations
Reviews foundational concepts and strategies of social work research with a focus on the comprehension, critique and utilization of research in social work practice and policy settings. Students critically reflect on examples of research and examine how power shapes knowledge. Emancipatory methodologies, including Indigenous research approaches, are explored.

SOCW 550 - Units: 1.5
Social Justice, Social Work and the Law
Examines theoretical, legal and critical perspectives of Indigenous law and Canadian law including the legal system and the legal processes that have an impact on professional social work practice. Critically examines the interplay between marginalization, structural inequalities, social work, social justice, Indigenous legal orders and Canadian law. Focuses on developing skills in critical reflection, intersectional analysis and socially just social work practice.

SOCW 551 - Units: 1.5
Indigenous Social Work Foundations
Critically examines historical and contemporary processes of colonization in Canada and resulting barriers embedded in policy and practices affecting Indigenous peoples. Focuses on matters of racism, anti-racism, epistemology, relationality and identity. Students explore their self-location, ideas, values and beliefs about working with Indigenous peoples and the implications for their social work practice. 
Prerequisite(s): SOCW 551.

SOCW 554 - Units: 1.5
Indigenous Policy and Practice
Builds on critical theories and perspectives introduced in SOCW 551 to explore the impact of Canadian policies and practices of Indigenous peoples. Introduces anticolonial policy analysis and explores responses and initiatives of Indigenous peoples through their own policy and practice work. Students explore the role of policy in their praxis and the implications for decolonizing social work.
Prerequisite(s): SOCW 551.

SOCW 571 - Units: 1.5
MSW Capstone
A culminating educational experience to consolidate learning and demonstrate preparation for advanced social work practice. Students will integrate, articulate, and evaluate learning from the courses and practice in the MSW program within the context of their other professional activities and prior academic experiences.
Prerequisite(s): Completion of all required coursework in the MSW program (excluding SOCW 506 or SOCW 506A).
Pre- or Corequisite(s): SOCW 506 or SOCW 506A.
Grading: INP, COM, N, F.

SOCW 580 - Units: 1.5 or 3.0
Special Topics in Social Work and Social Welfare
A variable content course that deals with special issues in social welfare and approaches to social work practice.
Notes: • May be taken more than once for credit in different topics.
• Offered as resources permit.

SOCW 590 - Units: 1.5 or 3.0
Directed Studies
Individual studies under the direct supervision of a social work faculty member. The content, credit value, and method of evaluation must be approved by the instructor and the Graduate Adviser prior to registration.
Notes: • May be taken more than once for credit in different topics.
• Pro Forma required.

SOCW 596 - Units: 3.0
Team Graduating Research Project/Report
Exploration of creative ways to integrate and disseminate what students have learned from the Master of Nursing program. Students will produce a scholarly paper, present their work, and respond to questions.
Prerequisite(s): 6 units of coursework in the MSW Advanced program (including SOCW 516).
Grading: INP, COM, N, F.

SOCW 598 - Units: 3.0
Individual Graduating Research Project/Report
Students working under social work faculty supervision complete a research project. This can include undertaking a research project for a social agency.
Prerequisite(s): 6 units of coursework in the MSW Advanced program (including SOCW 516).
Grading: INP, COM, N, F.

SOCW 599 - Units: 6.0
Thesis
Formerly: HSD 599
Specialized research on a topic area chosen in consultation with the student’s supervisory committee.
Note: After 16 months of coursework, the student is required to have an approved proposal on file to maintain registration in SOCW 599.
Prerequisite(s): • Completion of all required coursework in the MSW Advanced program (Thesis option); or
• permission of the school.
Grading: INP, COM, N, F.

SPAN - Units: 1.5

Spanish
Department of Hispanic and Italian Studies
Faculty of Humanities

SPAN 500 - Units: 1.5
Introduction to Bibliography and Methods of Research
Note: May be taken more than once for credit in different topics.
Grading: INP, COM, N, F.

SPAN 502 - Units: 1.5
Core Reading List Course I
Grading: INP, COM, N, F.

SPAN 503 - Units: 1.5
Core Reading List Course II
Grading: INP, COM, N, F.

SPAN 505 - Units: 1.5
Medieval Literature
Note: May be taken more than once for credit in different topics with permission of the department.

SPAN 507 - Units: 1.5
Renaissance and Baroque Literature
Note: May be taken more than once for credit in different topics with permission of the department.

SPAN 511 - Units: 1.5
Peninsular Literature from the 20th Century to the Present
Note: May be taken more than once for credit in different topics with permission of the department.

SPAN 512 - Units: 1.5
Formerly: SPAN 509, SPAN 517
Spanish and Latin American Literature of the 19th Century
Note: • Credit will be granted for only one of SPAN 512, SPAN 509, SPAN 517.
• May be taken more than once for credit in different topics with permission of the department.

SPAN 515 - Units: 1.5
Colonial Latin American Literature
Note: May be taken more than once for credit in different topics with permission of the department.

SPAN 519 - Units: 1.5
Spanish and Latin American Literature from the 20th Century to the Present
Note: May be taken more than once for credit in different topics with permission of the department.

SPAN 590 - Units: 1.5 or 3.0
Also: ITAL 590
Directed Studies
Grading: INP, COM, N, F.

SPAN 598 - Units: 3.0
Master’s Essay
Grading: INP, COM, N, F.

SPAN 599 - Units: 6.0
MA Thesis/Oral
Grading: INP, COM, N, F.

SPP - Units: 1.5 or 3.0

Special Topics in Studies in Policy and Practice
A variable content course which will focus on the policy, practice and/or research interests of faculty and students in the SPP Program.
Note: May be taken more than once for credit in different topics.
STATISTICS

Statistics Department of Mathematics and Statistics Faculty of Science

STAT 552 Units: 1.5
Applied Stochastic Models

STAT 553 Units: 1.5
Multivariate Analysis
Multivariate normal distribution; tests on covariance matrices; multivariate analysis of variance; discriminant analysis; classification analysis; cluster analysis; principal component analysis; factor analysis; multivariate regression analysis; canonical correlation; graphical procedures.

STAT 554 Units: 1.5
Time Series Analysis
Stationary time series; non-stationary time series; transformation; smoothing techniques; autoregressive moving average models; integrated models for non-stationary data; multiplicative seasonal ARIMA models; spectral analysis; linear filters.

STAT 556 Units: 1.5
Topics in Statistics
Topics include Analysis of Wildlife Populations, Bayesian Statistics, Bioinformatics, Biostatistics, Optimal design, Robust Statistics, Sampling Methods, Statistical Computing. Note: May be taken more than once for credit in different topics with permission of the department.

STAT 558 Units: 1.5
Design and Analysis of Experiments
Basic principles of experimental design; factorial designs; block designs; fractional factorial designs; response surface designs; nested and split-plot designs; optimal designs; techniques of analysis of variance; fixed effects models; random effects models.

STAT 559 Units: 1.5
Survival Analysis
Theory and techniques for censored and truncated data; nonparametric estimation of survival and cumulative hazard functions and associated hypothesis tests; semiparametric proportional hazards regression; survival models; regression diagnostics; inference for parametric regression models.

STAT 560 Units: 1.5 Hours: 3-0
Also: STAT 460 Bayesian Statistics
Bayesian modelling, prior distributions; Jeffreys prior, posterior distributions, single and multi-parameter models; Bayesian point and interval estimation; Bayes factors and point null hypothesis testing; Bayesian computation; decision theory. Other topics may include: hierarchical modeling, Bayesian model selection. Notes:
- Credit will be granted for only one of STAT 460, STAT 454 (if taken in the same topic), STAT 560, STAT 556 (if taken in the same topic).
- May be offered as a joint undergraduate and graduate class.

STAT 562 Units: 1.5
Distribution Free Statistics
Classical distribution free methods: tests based on the binomial distribution, contingency tables, methods based on ranks, statistics of the Kolmogorov-Smirnov type. Computing intensive distribution-free methods: re-sampling methods and empirical likelihood methods.

STAT 563 Units: 1.5
Also: BIOL 563
Topics in Applied Statistics
Survival analysis, generalized linear models, multivariate normal models, resampling methods, nonparametric and robust methods, meta-analysis, miscellaneous techniques.

STAT 564 Units: 1.5 Hours: 3-0-0
Also: STAT 464
Statistical Computing
Computer representation of numbers, univariate optimization, multivariate optimization, combinatorial optimization, genetic algorithms, EM algorithm, random number generation, numerical integration, simulation and Monte Carlo Integration, Gibbs sampling, Metropolis-Hastings algorithm, bootstrapping. Other topics may include: permutation tests, smoothing, reversible jump MCMC, importance sampling, hybrid Gibbs sampling. Notes:
- Credit will be granted for only one of STAT 464, STAT 454 (if taken in the same topic), STAT 564, STAT 556 (if taken in the same topic).
- May be offered as a joint undergraduate and graduate class.

STAT 565 Units: 1.5 Hours: 3-0-0
Statistical Methods for Genomic Data
Introduction to genomic data and statistical methodology for its analysis; examples of data may include single-nucleotide polymorphisms or gene expression levels, generated from microarrays or next-generation sequencing. Statistical techniques may include data preprocessing, filtering, normalization, exploratory methods, visualization, dimension reduction, differential expression, generalized linear models, corrections for multiple comparisons, clustering, gene ontology analyses, genome-wide association studies. Notes:
- Credit will be granted for only one of STAT 565, STAT 556 (if taken in the same topic).
- May be offered as a joint undergraduate and graduate class.

STAT 566 Units: 1.5 Hours: 3-0-0
Robust Statistics
Influence function and breakdown point; efficiency and robustness; robust location and scale estimation; robust regression; robust covariance matrix estimation; robust k-means clustering; robust principal component analysis; outlier detection. Notes:
- Credit will be granted for only one of STAT 566, STAT 556 (if taken in the same topic).
- May be offered as a joint undergraduate and graduate class.

STAT 568 Units: 1.5
Generalized Linear Models
Exponential family of distributions and generalized linear models; maximum likelihood estimation and inference; regression diagnostics; logistic regression; nominal and ordinal logistic regression; Poisson regression and log-linear models; clustered and longitudinal data.

STAT 589 Units: 1.5
Statistics Seminar
Note: May be taken more than once for credit with permission of the department.

STAT 598 Units: 3.0
Master's Project
Grading: INP, COM, N, F.

STAT 599 Units: 6.0
Master's Thesis
Grading: INP, COM, N, F.

STAT 693 Units: 3.0
Candidacy Examination
Grading: INP, COM, N, F.

STAT 699 Units: 21.0-30.0
Dissertation
Corequisite(s): STAT 693.
Grading: INP, COM, N, F.
### THEA 500A - WRIT 590

**THEA 500A**  
Units: 1.5  
Formerly: THEA 500  
Methods and Materials of Theatre Research  
Note: Credit will be granted for only one of THEA 500A, THEA 500.

**THEA 500B**  
Units: 1.5  
Formerly: THEA 500  
Methods and Materials of Theatre Research  
Note: Credit will be granted for only one of THEA 500B, THEA 500.

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<tr>
<th>Course Code</th>
<th>Units</th>
<th>Course Title</th>
<th>Description</th>
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<tr>
<td>THEA 501</td>
<td>1.5 or 3.0</td>
<td>Seminar in History and Criticism of Tragedy</td>
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<td>THEA 502</td>
<td>1.5 or 3.0</td>
<td>Seminar in History and Criticism of Comedy</td>
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<td>THEA 503</td>
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<td>Seminar in European Theatre History</td>
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<td>THEA 504</td>
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<td>Seminar in North American Theatre History</td>
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<td>THEA 505</td>
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<td>Seminar in Theatrical Styles</td>
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<td>THEA 508</td>
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<td>Scene Design</td>
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<td>THEA 509</td>
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<td>Seminar in Theatre History</td>
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<td>THEA 520</td>
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<td>Advanced Problems in Scene Design</td>
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<td>THEA 521</td>
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<td>Advanced Problems in Lighting Design</td>
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<td>THEA 522</td>
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<td>Advanced Problems in Costume Design</td>
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<td>Advanced Problems in Directing</td>
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<td>THEA 535</td>
<td>1.5</td>
<td>Research Methods in Applied Theatre</td>
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<td>THEA 590</td>
<td>1.5 or 3.0</td>
<td>Directed Studies</td>
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<tr>
<td>THEA 598</td>
<td>4.5</td>
<td>MA Essay</td>
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<td>THEA 599</td>
<td>6.0</td>
<td>MA Thesis</td>
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<td>THEA 690</td>
<td>1.5-6.0</td>
<td>Directed Studies</td>
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<td>THEA 693</td>
<td>3.0</td>
<td>Dissertation Proposal/Candidacy Exam</td>
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<td>THEA 699</td>
<td>30.0</td>
<td>Dissertation</td>
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### WRIT 500 - WRIT 590

**WRIT 500**  
Units: 1.5  
Graduate Writing Workshop  
A workshop in which students will focus on writing and workshopping in one genre: poetry, fiction, creative nonfiction, playwriting or screenwriting.  
Note: May be taken more than once for credit in different topics to a maximum of 4.5 units.

**WRIT 501**  
Units: 1.5  
Special Topics in Advanced Studies in Writing  
A class that focuses on literary models, specific elements of craft, and topics of interest to writers in more than one genre.

**WRIT 509**  
Units: 1.5  
Instructional Skill Preparation  
A seminar which focuses on pedagogy and teacher training in creative writing.

**WRIT 590**  
Units: 1.5  
Directed Studies in Instructional Skills Preparation  
A course which focuses on teacher training in creative writing.
WRIT 591  Units: 1.5
Directed Studies in Writing
A course tailored to the needs of a particular student in consultation with the supervisor and in the student’s area of studies.

WRIT 598  Units: 9.0
Major Writing Portfolio
The creation of an original creative writing portfolio in one of the following genres: poetry (30-50 pages), creative nonfiction (60-120 pages), fiction (60-120 pages), a stage play (60-100 pages), a film script (60-90 pages) or a production project with script/manuscript in one of the above genres.
Grading: INP, COM, N, F.