



ORIGINAL COURSE IMPLEMENTATION DATE: January 2005
 REVISED COURSE IMPLEMENTATION DATE: January 2018
 COURSE TO BE REVIEWED: (six years after UEC approval) September 2023
 Course outline form version: 09/15/14

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: MATH 480		Number of Credits: 3 Course credit policy (105)																	
Course Full Title: Selected Topics in Mathematics																			
Course Short Title (if title exceeds 30 characters):																			
Faculty: Faculty of Science		Department (or program if no department): Mathematics & Statistics																	
Calendar Description: Designed for students who wish to examine in greater depth a particular topic in mathematics. It will be offered either as an individual reading course or as a seminar, depending on student and faculty interest. Note: This course will be offered under different letter designations (e.g. C-Z) representing different topics. This course may be repeated for credit provided the letter designation differs.																			
Prerequisites (or NONE):		Four upper-level Mathematics courses and instructor's permission. Certain programs of study may require more particular prerequisites.																	
Corequisites (if applicable, or NONE):		NONE																	
Pre/corequisites (if applicable, or NONE):		NONE																	
Equivalent Courses (cannot be taken for additional credit) Former course code/number: Cross-listed with: Equivalent course(s): <i>Note: Equivalent course(s) should be included in the calendar description by way of a note that students with credit for the equivalent course(s) cannot take this course for further credit.</i>		Transfer Credit Transfer credit already exists: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Transfer credit requested (OReg to submit to BCCAT): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (if yes, fill in transfer credit form) Resubmit revised outline for articulation: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No To find out how this course transfers, see bctransferguide.ca .																	
Total Hours: 45 Typical structure of instructional hours:		Special Topics Will the course be offered with different topics? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, different lettered courses may be taken for credit: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, repeat(s) <input checked="" type="checkbox"/> Yes, no limit <i>Note: The specific topic will be recorded when offered.</i>																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Lecture hours</td><td></td></tr> <tr><td>Seminars/tutorials/workshops</td><td style="text-align: center;">45</td></tr> <tr><td>Laboratory hours</td><td></td></tr> <tr><td>Field experience hours</td><td></td></tr> <tr><td>Experiential (practicum, internship, etc.)</td><td></td></tr> <tr><td>Online learning activities</td><td></td></tr> <tr><td>Other contact hours:</td><td></td></tr> <tr><td style="text-align: right;">Total</td><td style="text-align: center;">45</td></tr> </table>		Lecture hours		Seminars/tutorials/workshops	45	Laboratory hours		Field experience hours		Experiential (practicum, internship, etc.)		Online learning activities		Other contact hours:		Total	45	Maximum enrolment (for information only): 24 Expected frequency of course offerings (every semester, annually, every other year, etc.): By student request and Department approval	
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Department / Program Head or Director: Ian Affleck		Date approved: November 21, 2016																	
Faculty Council approval		Date approved: April 28, 2017																	
Campus-Wide Consultation (CWC)		Date of posting: September 15, 2017																	
Dean/Associate VP: Lucy Lee		Date approved: April 28, 2017																	
Undergraduate Education Committee (UEC) approval		Date of meeting: September 29, 2017																	

Learning Outcomes

Upon successful completion of this course, students will be able to:

- Demonstrate advanced knowledge of the selected area, through discussions, seminars, and written presentations
- Solve problems at a level typical of an upper-level mathematics course
- Identify key sources of information for self-guided study in the area in question *i.e.* books, journal articles, online resources, etc.
- Practice advanced, independent study skills
- Prepare moderate length presentations or seminars in topics in mathematics

Prior Learning Assessment and Recognition (PLAR)

Yes No, PLAR cannot be awarded for this course because

Typical Instructional Methods (guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion)

Individual tutorials or small seminar groups.

Grading system: Letter Grades: Credit/No Credit: Labs to be scheduled independent of lecture hours: Yes No

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Text(s) and Resource Materials (if more space is required, download Supplemental Texts and Resource Materials form)

Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1. N. Young	An Introduction to Hilbert Space	<input type="checkbox"/>	Cambridge University Press	1988
2. L. Debnath, PMikusinski	Introduction to Hilbert Spaces with Applications	<input type="checkbox"/>	Academic Press	1997
3.		<input type="checkbox"/>		
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		

Required Additional Supplies and Materials (software, hardware, tools, specialized clothing, etc.)**Typical Evaluation Methods and Weighting**

Final exam:	40%*	Assignments:	20%	Midterm exam:	20%	Practicum:	%
Quizzes/tests:	%	Lab work:	%	Field experience:	%	Shop work:	%
Project:	20%	Other:	%	Other:	%	Total:	100%

Details (if necessary): *

* Students must obtain at least 40% on the final exam to pass the course.

Typical Course Content and Topics

The following description of course content, and the typical textbooks listed above, are a sample for a course on Hilbert space. This particular course content assumes the student has covered the content of MATH 211 and MATH 340.

1. Inner product spaces: linear spaces, inner products, parallelogram law.
2. Normed spaces: norms, completeness, Hilbert and Banach spaces, orthogonal expansions.
3. Fourier series: mean-square convergence, Bessel and Parseval inequalities, Fejer kernel, Weierstrass approximation theorem.
4. Dual spaces: linear functionals, the dual space, Riesz representation theorem.
5. Linear operators: inverse, adjoint, Hermitian operators, spectral theory for compact operators, unbounded operators, differential and integral operators, contractions.