## Calendar

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Time</th>
<th>Place</th>
<th>Speaker</th>
<th>Title</th>
<th>Abstract Attached</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday, February 24</td>
<td>Curves Seminar</td>
<td>3:00 p.m.</td>
<td>Jeffery 319</td>
<td>Mike Roth, Queen’s University</td>
<td>Introduction to Chern Classes III</td>
<td></td>
</tr>
<tr>
<td>Thursday, February 25</td>
<td>Ergodic Theory Seminar</td>
<td>2:30 p.m.</td>
<td>Jeffery 422</td>
<td>Sascha Troscheit, University of St. Andrews</td>
<td>Ergodic Theory and Stochastic Attractors</td>
<td></td>
</tr>
<tr>
<td>Thursday, February 25</td>
<td>Math Club</td>
<td>5:30 p.m.</td>
<td>Jeffery 118</td>
<td>Danny Rorabaugh, Queen’s University</td>
<td>Integer Sequences</td>
<td></td>
</tr>
<tr>
<td>Friday, February 26</td>
<td>Number Theory Seminar</td>
<td>11:00 a.m.</td>
<td>Jeffery 422</td>
<td>Shuntaro Yamagishi, Queen’s University</td>
<td>Zeroes of polynomials in many variables with prime inputs</td>
<td></td>
</tr>
<tr>
<td>Friday, February 26</td>
<td>Graduate Seminar</td>
<td>12:30 p.m.</td>
<td>Jeffery 319</td>
<td>Tristan Milne</td>
<td>Reconstructing internal structures from boundary partial differential equation data</td>
<td></td>
</tr>
<tr>
<td>Friday, February 26</td>
<td>Department Colloquium</td>
<td>2:30 p.m.</td>
<td>Jeffery 234</td>
<td>Andrew Droll, Gnowit, Inc.</td>
<td>The versatility of mathematics: Hard problems in math and in the real world</td>
<td></td>
</tr>
<tr>
<td>Friday, March 18</td>
<td>Conference Room</td>
<td>1:30 p.m.</td>
<td>Jeffery 521</td>
<td>Saber Jafarpour</td>
<td>On the role of regularity in mathematical control theory</td>
<td></td>
</tr>
</tbody>
</table>

Items for the Info Sheet should reach Anne (burnsa@mast.queensu.ca) by noon on Monday. The Info Sheet is published every Tuesday.

**Wednesday, February 24, 3:00 p.m. Jeffery 319**

**Curves Seminar**

**Speaker:** Mike Roth  
**Title:** Introduction to Chern Classes III

**Abstract:** We will give a construction of Chern classes satisfying the axioms from the previous lecture.

**Thursday, February 25, 2:30 p.m. Jeffery 422**

**Ergodic Theory Seminar**

**Speaker:** Sascha Troscheit  
**Title:** Ergodic Theory and Stochastic Attractors

**Abstract:** In this talk we will discuss an application of Kingman's Subadditive Ergodic Theorem to analyze classes of attractors called self-similar and self-affine attractors.
After a brief introduction to deterministic attractors we will consider several random variants of 'random iterated function systems' and prove some dimension theoretic results. Time permitting, we will take a look at separation conditions and their effect on dimensions and measures.

Thursday, February 25, 5:30 p.m. Jeffery 118  
Math Club 
Speaker: Daniel Rorabaugh  
Title: Integer Sequences  

Abstract:  
The powers of 2: \{1, 2, 4, 8, 16, 32, 64, \ldots\}. The maximum number of regions obtained when slicing up the plane with \(n\) lines: \{1, 2, 4, 7, 11, 16, 22, 29, \ldots\}. The decimal digits of \(\pi\): \{3,1,4,1,5,9,2,6,5,3,\ldots\}. The sum of the positive divisors of \(n\): \{1, 3, 4, 7, 6, 12, 8, 15, 13, 18, \ldots\}. 

Integer sequences are found throughout mathematics, but especially in number theory and combinatorics. Sometimes they are used to count a class of mathematical objects. Sometimes they just have fascinating numerical properties. What number comes next in this sequence: \{1,1,2,1,2,1,5,1,2,1,4,1,\ldots\}? What is the rule for constructing the following sequence: \{1,2,2,1,1,2,2,1,2,2,1,1,1,2,2,\ldots\}? 

The number of neutrons in the most common isotope of the \(n\)-th periodic element: \{0, 2, 4, 5, 6, 7, 8, 10, 10, 12, \ldots\}. The year in which the population of earth reached \(n\) billion: \{1804, 1927, 1959, 1974, 1987, 1999, 2011, (\ldots)\}. Integer sequences are also found outside of mathematics, in every part of life. Can you figure out what this sequence represents: \{3, 3, 5, 4, 4, 3, 5, 5, 4, 3, 6, \ldots\}? Do you know what the next term of this sequence is: \{50, 40, 27, 36, 34, 24, 21, 4, 31, \ldots\}? 

In this talk, we share the joys of studying integer sequences and tools available for investigation. With sequences, you can practice programming and make connections between disciplines. They are the source of both silly puzzles and deep, unsolved mathematical questions.

Friday, February 26, 11:00 a.m. Jeffery 422  
Number Theory Seminar 
Speaker: Shuntaro Yamagishi  
Title: Zeros of polynomials in many variables with prime inputs  

Abstract:  
Given a polynomial with integer coefficients, finding its zeros in primes is an important topic in number theory. In this talk I will introduce some well known results and recent progress in this area. I will also talk about my joint work with S. Y. Xiao related to this topic.

Friday, February 26, 12:30 p.m. Jeffery 319  
Graduate Seminar 
Speaker: Tristan Milne  
Title: Reconstructing internal structures from boundary partial differential equation data  

Abstract:  
The problem of determining something about the interior of a region in a non-invasive way appears in many distinct fields such as medical imaging and resource exploration. This type of problem can be solved using the theory of inverse problems and partial differential equations. In this talk I will discuss the problem of determining electric conductivities over an unknown region from boundary data, as well as a newer problem involving the propagation of waves across a manifold. This talk will be accessible to anyone who knows some basic information about Riemannian manifolds.
Abstract: Mathematics is a creative endeavour, and mathematicians are used to working on intractable problems that require dynamic and original thinking to produce solutions. Mathematicians are intellectually fearless, and are trained to think flexibly, to evaluate ideas objectively and efficiently, and to see new paths to solutions by combining diverse tools. In this talk, we will go from research on the Riemann hypothesis, to industrial machine learning problems to some of the biggest global problems we face as a civilization. We will discover something amazing: Training in mathematics provides an amazing toolkit for dealing with wide-ranging problems, and for contributing in meaningful ways to important problems in numerous other domains. The intent will be to inspire you to think big; to look for applications of mathematical thinking in the world around you; to go beyond intellectual fearlessness, into something more - realizing that mathematics is not only intellectual, but can present powerful motivators for altruistic action.