

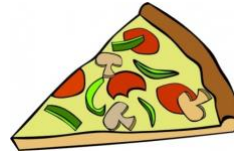
UNDERGRADUATE MATH SEMINAR

The next math seminar of the term will be:

DATE: THURSDAY, November 2

Time & 12:30 – Pizza in the Bailey 204

Location: 12:50 – 1:45 Seminar in Bailey 207



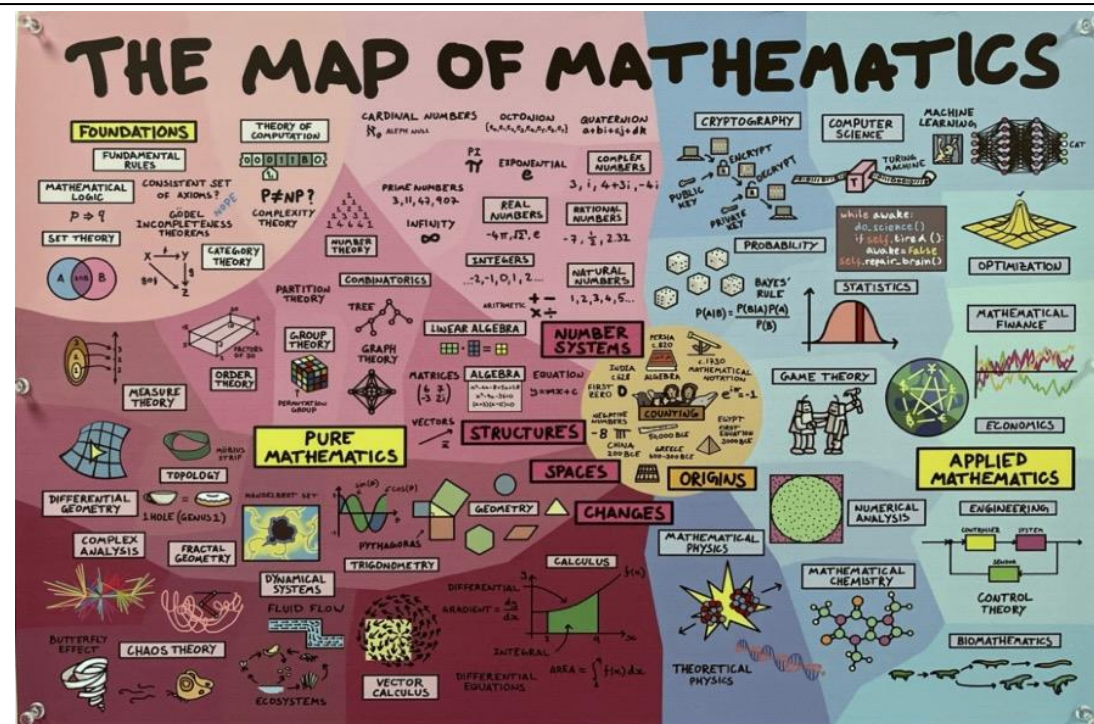
Professor Ralph Morrison

Title: Chip-firing on Banana Paths

Abstract: In this talk, we'll explore chip-firing games on graphs. Start with a graph, which is a collection of nodes connected by edges. Then, place some poker chips on the vertices of the graph. Finally, move the chips around the graph by selecting a node and having it donate chips to its neighboring nodes, one along each edge connected to it. We'll study what these games look like on a family of graphs called "banana paths", which have all their nodes in a row, with (possibly many!) edges connecting each node to the one or two nodes next to it. Our main question is this: what's the smallest number of chips we can place on a banana path so that we can move a chip to any node we like, without having a negative number of chips anywhere? This is joint work with undergraduates from Williams' SMALL REU in 2023: Marchelle Bougher, Nila Cibu, Cassie Ding, Steven DiSilvio, Sasha Kononova, Chan Lee, and Krish Singal.

Math Coach Position Available – Winter Term

The Math Department and the Office of Student Success will be hiring a Math Coach for MTH 105-01 for the winter term. Responsibilities include: attending the class (MWF: 8:00-9:05 and T: 9:00-11:50), assisting the professor with in-class activities, holding out-of-class help/tutoring sessions, and perhaps some grading. More details for this position will be posted soon, including the application process and requirements. Check this bulletin boards around Bailey Hall and the electronic display screen.



Majoring or
Minoring in
Math? What
Are the
Winter Term
Math
Courses?

On the next
page, you can
find descriptions
of the math and
statistics
courses beyond
calculus that
math majors and
minor might

Winter Term Course Registration: This Week!

During this week, you will have the opportunity to register for your winter term courses. To save you some time navigating the course listings online, we have listed some math and statistics courses beyond the calculus sequence that might be of interest to math majors and minors.

- **Math 199** is the department's "bridge course," intended to help students make the transition from computationally oriented courses to more theoretical proof-writing courses. It is a **required** course for all math majors and minors that is *usually* taken *after* a student has taken Math 115.
- **Math 228** (Probability Theory). An introduction to the theory of probability. Discrete and continuous random variables. Jointly distributed random variables, sums of random variables and properties of Expectation. Moment generating functions, inequalities, and Limit Theorems. Focus will be on both the theoretical aspects of probability and problem solving. Discussion of some of the probability problems encountered in actuarial, financial, and scientific fields. This course takes a somewhat more theoretical approach to the study of probability than its 100-level counterpart, Math 128. Note that students may only take one of these two courses.
- **Math 234** (Differential Equations). This is a first course in differential equations. It takes a somewhat more theoretical approach to the study of differential equations than its 100-level counterpart, Math 130. Note that students may only take one of these two courses. **Note: MTH 234 carries GDQR credit.**
- **Math 325** (Knot Theory). An introduction to the mathematical study of knots, including colorability, chirality, genus, and the Jones polynomial. Course will also explore the relationship between mathematical knots and structures in molecular chemistry and biology, and physics.
- **Math 340** (Linear Algebra). This is a foundational course in math that is **required** for math majors. The primary objects of study in this course are vector spaces and the linear maps between them, which are implementable via matrix multiplication.

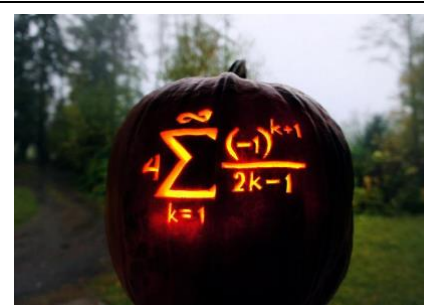
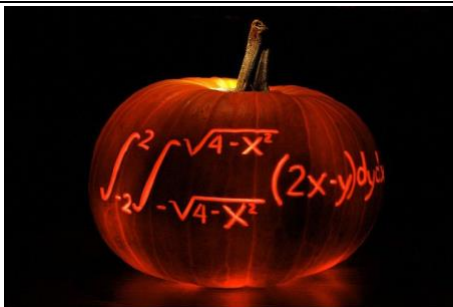
There is also a pair of courses in Statistics.

- **Statistics 104** (Introduction to Statistics) This course provides the conceptual foundations and analytical skills for students to be able to quantify uncertainty and to make rational decisions in the face of uncertainty. It addresses the collection of high-quality data the basic statistical analysis of such data.
- **Statistics 264** (Regression Analysis). In this course, both the theory and application of regression analysis to develop regression models to fit real-world data sets are studied.

Check the online course listings for the full course descriptions and the time at which the courses are being offered before registering!

Something Spooky for Halloween?

Enjoy some Pumpkin Pi!



Calculus Help Center: free calculus tutoring!

The Calculus Help Center (CHC) offers **free, drop-in, peer-tutoring** in calculus courses through Math 117. It is Sunday through Thursday, 7:30-10:00pm in the Sorum House seminar room.