

UNDERGRADUATE MATH SEMINAR

The next math seminar of the term will be :

DATE: **THURSDAY, October 19**

Time & **12:30 – Pizza in the Bailey 204**

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



In this seminar, **Professor Harris Daniels** from the math department at **Amherst College** will present the following talk:

Title: The Congruent Number Problem

Professor Harris Daniels

Abstract: Much effort has gone into studying right triangles with rational side lengths. One interesting question associated with these geometric objects is, what values occur as the area of such triangles? In fact, a 10th century manuscript asserts that this question is the "principal object of the theory of rational right triangles." We will survey what is known about this question, show how the question is related to elliptic curves, and end with a conjecture about the answer that is still open today.

An Upcoming Math Talk on Zoom

The Bay Area Mathematical Adventures (BAMA) organization has opened their next talk on Zoom to the math interested public.

Tuesday, October 24 at [ZOOM LINK](#).

Join from 10:15 to 10:30PM (EDT).



The lecture is entitled, "*Single-Line Drawings via Mathematical Optimizations*" will be given by **Professor Bob Bosch**, the James F. Clark Professor of Mathematics at Oberlin College and award winning writer and artist. The description follows:

Optimization is concerned with optimal performance—finding the best way to complete a task. It has been put to good use in a great number of diverse disciplines: advertising, agriculture, biology, business, economics, engineering, manufacturing, medicine, telecommunications, and transportation (to name but a few). In this lecture, we will showcase its amazing utility by demonstrating its applicability in the area of visual art, which at first glance might seem to have no use for it whatsoever! Our focus will be on how various techniques in mathematical optimization can be used to design beautiful and intricate single-line drawings.



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

On the next page, you can find an overview of the winter term registration process as well as brief descriptions of the math and statistics courses that math majors and minor might consider taking.

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.

Winter Term Advising, Pre-Approval, Registration Underway

As we have passed the halfway point of the fall term, it is time to start thinking about winter term courses. Academic advising, the period during which students should talk with their faculty advisor to plan their winter schedule is happening now. The **Pre-Approval** process is also underway, with a fast approaching deadline. All of this is happening in preparation for Winter Term Course Registration.

Timeline:

- *Faculty Academic Advising:* Now through Friday, October 27
- *Pre-Approval Requests to Be Submitted:* **Now through Wednesday, October 18**
- *Winter Term Course Registration (by appt):* Monday, October 30 – Thursday November 2

This winter term, **five math courses require pre-approval: MTH 105, 110, 113, 117, and 199.**

If you would like to enroll in any of these courses, you need to complete the math department's [Pre-Approval Survey](#). The due date for this is **OCTOBER 18**. After the department reviews the pre-approval requests, selected students will be automatically registered for Pre-Approved courses prior to their official registration appointments (which begin October 30).

Some Math and Statistics Courses: This winter, the math department will be offering several interesting courses beyond the calculus sequence that are suitable for 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 differential equations 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 descriptions to see course prerequisites before registering!