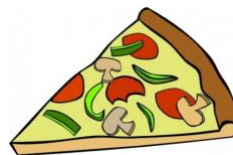## UNDERGRADUATE MATH SEMINAR

The next math seminar will be

**DATE:**     ==THURSDAY, March 2==

**Time** &     **12:30 –** Refreshments in **Bailey 204**

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

In this seminar, **Professor Roger Hoerl** of the Union College Math Department will present the following talk.

Professor Roger Hoerl

## Title: Is the 2020 Census "Fit for Apportionment"?
Mathematical and Statistical Issues in Apportioning Seats to the US House of Representatives

Abstract: Based on the census of 2020, New York lost a seat in the US House of Representatives, Texas gained two seats, and several other states gained or lost a seat. The reapportionment of seats in the House obviously impacts our political system. How exactly are these important political decisions made, and how reliable was the 2020 census, which was conducted in the middle of a pandemic? In this seminar, we will go back to the US Constitution to see how apportionment was originally stipulated and walk through critical mathematical and statistical issues involved in following the constitutional process. We then take a deeper look at the 2020 census and raise concerns about its adequacy for reapportionment. In summary, we argue that six states received the wrong number of seats in the House of Representatives.

## Work-Study Course Assistant Jobs in the Math Department

Are you eligible for work-study and looking for a job opportunity in the math department? You can earn money while gaining valuable experience as a **course assistant** in the math department. This is particularly useful for those heading to graduate school, planning to pursue a career in teaching, or who really like math!

Course assistants help a professor with a particular math course. Typical duties include grading homework and possibly holding extra office hours for students, while working closely with the professor.

Qualifications for a position include having a strong record in calculus courses (with grades in the A-range), and possibly also MTH 130; successful completion of at least one upper level math course; math major/minor, though engineering majors are welcome to apply; the ability to maintain confidentiality is a MUST; strong time management skills; strong verbal and written communication skills; solid organizational skills, and the ability to pay attention to details.

To see more details of the position and to apply, visit HANDSHAKE online: Math Course Assistant.

## Talk It Up! Steinmetz, HRUMC Abstract Submission Deadlines Approaching

This year's spring Steinmetz Symposium is **Friday, May 12**; however, the abstract submission deadline is **Thursday, March 2 at 11:59pm**. Abstracts are required for oral and poster presentations, panels, as well as team displays. Only presentations that have an associated abstract will appear in the program. Submit your abstract through the Steinmetz website: https://steinmetz.union.edu

If you are planning on presenting at the Hudson River Undergraduate Mathematics Conference on **Saturday, April 1** at **Mount Holyoke College**, the abstract submission deadline is **Monday, March 6**, done through the HRUMC website https://sites.google.com/view/hrumc. If you would like to attend the conference but not make a presentation, that is OK! Such Union participants are asked let **Professor Paul Friedman** (friedmap) know by **Friday, March 10** and to register for the conference (at the site above) by **Tuesday, March 28**.

## Spring Term Prescheduling: This Week!

Spring term prescheduling is this week on Self Service.  As a reminder, the math department is 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.  This is a WAC course, too!  Two sections: 199-01 MWF 9:15-10:20, and 199-02 MWF 1:50-2:55.

**Beyond Math 199**: There are several courses being offered that have a Math 199 prerequisite:

- **Math 224** (Geometry) is a course in transformation geometry, studying and classifying the distance preserving functions, called isometries, of the plane.  It is a course that is appropriate for students coming straight from Math 199.  Additionally, as rudimentary transformation geometry is now included in the Common Core in middle and high school math, this course is wonderful for students considering teaching as a career.  MWF 9:15-10:20.
- **Math 228** (Probability Theory). This course is an introduction to probability theory intended for math majors and minors. The focus of this course will be on both the theoretical aspects of probability and problem solving.  The prerequisites are Math 197 or Math 199, and Math 117, which may be taken concurrently.  NOTE: this course is not open to students who have passed Math 128 and vice versa. Choose wisely (a probability pun!).  MWF 1:50-2:55.
- **Math 332** (Abstract Algebra 1) is a beautiful course that generalizes what you know about algebra in the integers and real numbers to a more abstract setting. The main objects of study in this course are groups, rings, and fields. This course is required for the major. The prerequisite for this course is one of Math 219, 221, 224, 228, 235, or 248 or permission from the chair.  MWF 1:50-2:55.
- **Math 334** (Partial Differential Equations) Analytic and numerical methods will be introduced to examine the solutions of elliptic, parabolic and hyperbolic types of PDEs. Real-world examples and applications include signal, image and video processing, medical imaging, heat conduction, wave traveling, and so on. Prerequisites: MTH 234 or (MTH 130 and MTH 199).  MWF 10:30-11:35.
- **Math 436** (Topology). Topology is the study of the properties of objects in space that are unchanged by continuous deformation and is considered fundamental in the study of higher mathematics. Prerequisites: a 300-level MTH course or permission from the chair.  MWF 11:45-12:50.

There are also a couple of statistics courses being offered!

- **Statistics 164** (Strategies of Experimentation: Statistical Design and Analysis of Experiments) Students will learn different experimental design options when experimenting with multiple variables as well as analytic methods.  Prerequisites: one of STA 104, STA/MTH 128, MTH 228, STA 264, MER 301, ECO 243, PSY 200 or permission from the chair.  MWF 9:15-10:20.
- **Statistics 364** (Big Data Analytics).  Learn many techniques on how to analyze large data sets using statistical programming languages.  This is a great course for students considering graduate study or careers in the areas of statistics, data science, machine learning, computer science, econometrics, or related disciplines. Prerequisites: STA 264 or ECO 243 or permission from the chair. MWF 11:45-12:50.



**Truth in Advertising**

topology  noun
[top-ol-uh-jee]  1. The study of adding tasty toppings.

This is not a description of Math 436…

(found on Twitter)