

UNDERGRADUATE MATH SEMINAR

The next seminar of the winter term will be

DATE: **THURSDAY, April 6**

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

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



In this seminar, two Union College junior math majors, **Ricky Farina** and **Izzy Petersen**, will talk about their experiences at a Research Experience for Undergraduates (REU) this past summer.

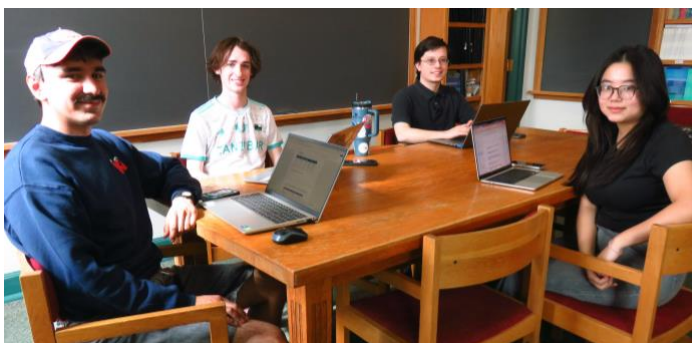
Title: **Our REU in Math Experiences**

Abstract: In this talk, we will give short presentations of the research we each conducted during Marist University's SMART REU program last summer. After this, we will discuss the REU application process, the program itself, and some of the takeaways from our research experiences!

- **Ricky's talk:** Excessive Daytime Sleepiness (EDS) is a primary symptom of several sleep disorders, many of which exacerbate cardiovascular complications, and its causal chain (i.e. what causes the causes) remains largely unknown. This task is incredibly challenging to undertake, as causal relationships are notoriously difficult to prove, usually requiring carefully designed randomized experiments. With over 50 variables in consideration, it is unfeasible to go about testing these relationships one by one. In this talk, we will discuss how we can model these associations between variables (and even argue for causal structure) by using statistics and machine learning. We will specifically discuss the use of Bayesian Networks and using Directed Acyclic Graphs (DAGs) to visualize the causal chain.
- **Izzy's talk:** In 2003, the mathematics community was introduced to a Welsh Corgi named Elvis in the paper *Do Dogs Know Calculus?* In the article, author Timothy J. Pennings described a game of fetch he played with his dog along the shore of Lake Michigan. With Elvis standing next to him at the shoreline, the author would throw a tennis ball into the water. In this scenario, the shortest route is a straight swim, while any route that involves running can be covered at a greater average speed than pure swimming. The problem for Elvis — and for generations of first-semester calculus students — is to find the precise path that minimizes the total travel time to the ball. In our research, we learned that as Elvis finds his optimal path he also defines a distance function, or metric, on the beach-water space. In this talk I will formally define the metric, and describe the interesting unit ball it induces

Actuarial Science Club Participates in Major Competition – by Caleb Hill '28

The Actuarial Science Club (ASC) participated in the 2026 Society of Actuaries case competition, where we acted as an actuarial team compiling a comprehensive report advising an interstellar mining insurance company in the year 2175. Using 4 separate datasets, we compiled premiums for mines across different solar systems. Our work involved data cleaning, statistical modeling, and minimizing correlated "catastrophic" risk events, such as solar storms and space pirates. We plan to compete again next year in another role-playing case competition. If you're interested in data analysis, statistics, and applying math to real-world problems, we encourage you to reach out to the leaders of ASC.



Talha Khan, Caleb Hill, Jack Harmon, and Wendy Pham working on the Society of Actuaries case competition.

Join the Union Actuarial Science Club!

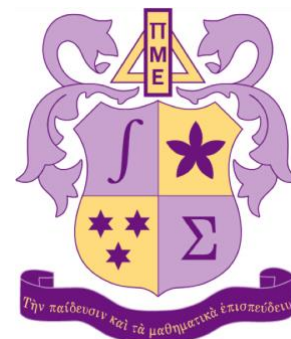
https://groupme.com/join_group/109994678/G4XRIVQv

Pi Mu Epsilon – Math Honors Society Accepting Applications

Pi Mu Epsilon (PME) is a national undergraduate math honors society. In Spring 2013, a chapter of PME was established at Union College. Now we are looking to induct new members who have demonstrated an ability and interest in mathematics consistent with PME's purpose and goals.

To be considered for membership into Union's chapter of PME, a student must have

- taken at least two math courses at the 200-level or above;
- a minimum campus-wide GPA of 3.0 and a minimum GPA of 3.0 in all math courses that can be used to fulfill a math major;
- a demonstrated engagement and involvement, while at Union College, in the promotion of mathematics at Union College and/or broader community, (examples include, active involvement in the Union College Math Club, in the Association of Women in Mathematics, in the Hudson River Undergraduate Mathematics Conference, in the Calculus Help Center, in math tutoring through the Kenney Center, in math problem solving training sessions and/or competitions, regular attendance at the Union College Math Department Seminar);
- an interest in joining PME, demonstrated by writing a few paragraphs/mini-essay in an email to **Professor Paul Friedman** (friedmap@union.edu) explaining your interest, your qualifications, and how you have supported and will continue to support the purpose and goals of PME. This email must be received by **noon on Thursday, April 23**.



The national initiation fee for PME is \$30. This covers the cost of membership and also a one-year (two issue) subscription to the MPE Journal. Members of MPE can also purchase other PME items such as tassels for graduation, t-shirts, etc. For more information, go to the website pme-math.org.

Hudson River Undergraduate Mathematics Conference Saturday, April 25 - Vassar College. REGISTER NOW!

The 32nd annual Hudson River Undergraduate Mathematics Conference ([HRUMC](http://hrumc.org)) will be **Saturday, April 25** at **Vassar College** in Poughkeepsie, NY. This is a *free* daylong conference, and the math department will provide transportation for those interested in attending. The conference, co-founded by Union, features 15-minute talks *primarily by students*, and a keynote address by a prominent mathematician. This conference is **perfect** for students to present their thesis work and/or to get ideas about future projects. How can you join the fun? **Register** → → → → → →

Timing: Registration is now open on the HRUMC website, [HRUMC](http://hrumc.org) (findable from Union Math Department website -> Activities -> HRUMC).

- Online registration and title/abstract submission for speakers: **April 7**.
- Online registration deadline for those not presenting a talk: **April 17**.
- To help the math department as we coordinate Union's participation and travel needs, if you are planning on attending this year's HRUMC (whether you will be giving a talk or not), please contact **Professor Paul Friedman** by **April 17** (though earlier is appreciated!).

HRUMC website for more information, registration, and abstract submission:

<https://sites.google.com/view/hrumc>



CALCULUS HELP CENTER!

Sunday, Tuesday, and Thursday: 7:30 – 10:00pm, Sorum House Seminar Room