UNDERGRADUATE MATH SEMINAR

Professor Davide Cervone

The next math seminar will be back at its usual time and location.

DATE: <mark>THURSDAY, November 11</mark>

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

Location: **12:55 – 1:45pm:** Seminar in **Bailey 207**

In this seminar, **Professor Davide Cervone** from the Union College Department of Mathematics will deliver the following talk:

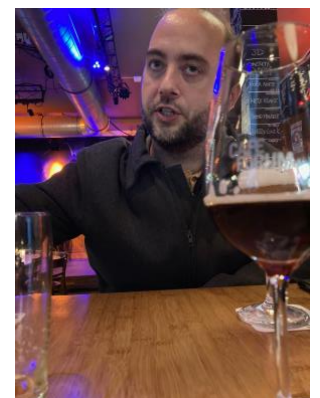### Title: Some Unusual Dice and their Connections to Voting

Abstract: We are all familiar with the property that, for numbers, if $a > b$ and $b > c$, then $a > c$, and it is reasonable to expect that this property would hold in other situations where one thing "beats" another in some way. It turns out that this is not always the case, however. For example, in voting, it is possible to have candidate A be preferred to candidate B by a majority of voters, and B preferred to C by a majority, but also have C preferred to A by a majority of voters! This was described by the Marquis de Condorcet at the end of the 18th century, and is referred to as a Condorcet cycle, and it makes it hard to decide who should be the winner in an election that contains such a cycle. Similar cycles can be found in other situations as well. For example, it is possible to produce a set of three dice where the first beats the second more than half the time, the second beats the third more often than not, while the third beats the first more than 50% of the time. Such "non-transitive dice" have a close connection to the voting situation, and understanding one can help understand the other. In this talk, we illustrate the connection between voting and non-transitive dice, explore how they work with longer cycles, and generalize these cycles to ones involving the comparison of more than two dice (or candidates) at a time.

News from Abroad: An Alumnus and an Emeritus Walk into a Bar…

Andy Mackenzie '09, a double major in Math and Economics, and **Professor Emeritus Bill Zwicker** connected this past month in Maastricht in the Netherlands.   After graduating from Union, Andy earned his PhD in Economics from the University at Rochester. Following this, he took a position at the Maastricht University. And, most excitingly, he just received tenure.
    CONGRATULATIONS, ANDY!

Andy Mackenzie '09 and Professor Emeritus Bill Zwicker in Maastricht

Professor Zwicker, who is currently continuing his research in Paris, was visiting Maastricht University at the end of October to give a research seminar on a joint paper written with Union College statistics **Professor Roger Hoerl** and another co-author, Josep Freixas of the Polytechnic University of Catalonia (in Barcelona).

While in Maastricht together, Bill and Andy took the time to catch-up over an adult beverage.