

## UNDERGRADUATE MATHEMATICS SEMINAR

**Next week**, the math seminar will be joint with the Biology Department. It is scheduled for **Thursday, April 26**.

The talk will be delivered by **Professor John Geddes** from Franklin W. Olin College of Engineering in Needham, Massachusetts, who is visiting Professor Black.

Please check the posters and announcements throughout Bailey Hall next week, as well as the online listing at <http://www.math.union.edu/activities/seminars/student/welcome.html> for the time, location, title and abstract.

## Professor Taylor to Receive Teaching Award from MAA

The Mathematical Association of America's Seaway Section has announced recently that Professor **Alan Taylor** has been selected to receive the Clarence Stephen's Distinguished Teaching Award. He will receive the award at a formal banquet at the upcoming MAA Seaway Section next weekend.

The most recent issue of the newsletter of the Seaway Section, "Electric Current", contains the following report from the Clarence Stephen's Award Committee, by Olympia Nicodemi:

"Dr. Alan Taylor of Union College is this year's winner of the Clarence Stephen's Distinguished Teaching Award. Alan Taylor is an extraordinary teacher of both students and faculty. In his 31-year career at Union College, he has been the most popular teacher in the mathematics department. Students love his ability to clearly explain complex material, communicate the excitement and beauty of mathematical ideas, and challenge them to learn more than they thought possible.

"Through the creation of two highly successful courses for liberal arts students, *Topics in Mathematical Political Science* and *Game Theory and the Humanities*, he has

provided a model for such courses at Union and throughout the country. His publications have changed how and what we teach at every level. From his chapter on fair division in *For All Practical Purposes* to his challenging *Mathematics and Politics: Strategy, Voting, Power, and Proof*, he has taught all of us about the mathematics of social choice."

The description of the Clarence Stephen's Award, as posted on the Seaway Section's website is:

"In 1991, the Board of Governors of the MAA established the Section Awards for distinguished College or University Teaching of Mathematics to recognize teachers of Mathematics at the post-secondary level who have been widely recognized as extraordinarily successful. Their teaching effectiveness must be documented and must have had influence beyond their own institutions.

"Each year the Seaway Section Teaching Award Committee, appointed by the Chair of the Section, chooses a recipient for the Section Award from nominations by Section membership. The awardee is honored at the Spring meeting of the section with a certificate, an invitation to speak, and also

becomes the official Section nominee for the MAA Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics.”

Congratulations, Professor Taylor! A well-deserved honor!!

## Pieces from Theses: A View from Peter Wright ('07)

When first encountering the idea of actually having to write a mathematics senior thesis, I was deeply concerned with what lay ahead. I soon found that what at one time seemed like an impossible task, was actually quite manageable. Having time to work one-on-one with Professor Niefield for two terms allowed my confidence and mathematical writing to flourish. Coming in, this type of direct interaction with a professor was literally frightening, but her kindness and willingness to teach me made it the most memorable aspect of the entire process.

Moving beyond my erroneous first impressions, my topic of study was how relations can be viewed as other mathematical concepts. By beginning off with a relatively familiar topic I was gently eased into the process of being taught in this entirely new way. Once we had the basic groundwork in place of how relations can be viewed and how they behave, we first shifted our focus to matrices and how one might view a relation in matrix form. By first reintroducing basic concepts about general matrices, we soon came across the relation matrix, an array of 1's and 0's representing whether or not there were elements in some relation in a Boolean fashion. What I didn't realize at first, but would soon become apparent to me, was the liquid nature of the new information I was

encountering. Essentially that there was no specific direction that Professor Niefield wanted me to go in, so I could actually choose as we progressed what topics I found interesting and ultimately wanted to cover in my final version of the thesis.

Anyway, continuing on the progression of discovery, we next examined how relations can be viewed as functions and visa versa. This is where the meat of my own work was put in, as I was challenged to prove many propositions on my own under Professor Niefield's guiding hand. Once we had connected these three different areas of mathematics, Professor Niefield finally introduced an entirely new field of mathematics, which I had never heard of before, called category theory. Essentially, category theory is a unifying theory of mathematics that works on a higher level and does not deal directly with elements or sets. Instead it uses broader terms of objects and morphisms that can be applied to nearly every area of mathematical study that is taught in college, from relations to functions to even abelian groups. With this as a final stop in my thesis discussion, we used the remaining weeks to work on my mathematical writing as well as filling in any missing holes of information that were now necessary in order to create a coherent final project.

## Problem of the Newsletter: April 20, 2007

Congratulations to **Brandon Bartell '10** and **John Peters** for submitting a correct solution to last week's problem of the newsletter. You can view John's solution on the bulletin boards around Bailey Hall.

**Here is this week's problem:** Inscribe a rectangle of base  $b$  and height  $h$  in a circle of radius one, and inscribe an isosceles triangle in the region of the circle cut off by one base of the rectangle (with that side as the base of the triangle). For what value of  $h$  do the rectangle and triangle have the same area?

Professor Friedman will accept solutions to this problem until 12:00 noon Thursday, April 26.