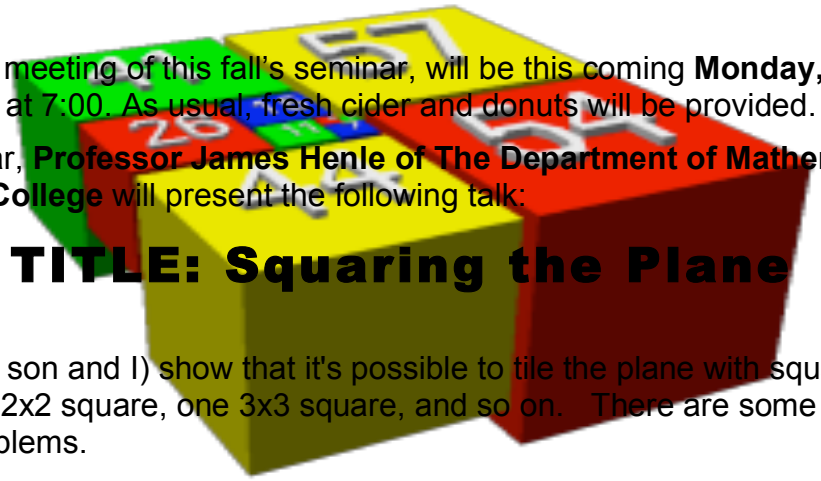
Department of Mathematics November 3, 2006

# UNDERGRADUATE MATHEMATICS SEMINAR



The next, and FINAL meeting of this fall's seminar, will be this coming **Monday, November 6**, in Bailey 312 beginning at 7:00. As usual, fresh cider and donuts will be provided.

In this week's seminar, **Professor James Henle of The Department of Mathematics and Statistics of Smith College** will present the following talk:

**TITLE: Squaring the Plane**

ABSTRACT: We (my son and I) show that it's possible to tile the plane with squares using exactly one 1x1 square, one 2x2 square, one 3x3 square, and so on. There are some generalizations and a lot of open problems.

## Terms Abroad … for Math Majors?

Last week's newsletter featured, Vincent Taurassi '04, a third-year student at NYU Law. While an undergraduate at Union, Vin participated in the Budapest Seminars in Mathematics. Here is a report from Vin about his experience in the program.

General Impressions

Let me start off by saying that to this day, my semester abroad in Budapest is the greatest learning experience I have ever had. When I say that, I am not just talking about what I gained through mathematics, but also life in general. Was it easy? No. Culture shock is real and it is difficult to overcome in the beginning. However, once you get settled in for a few weeks, it fades away and you truly are able to get a brand new perspective on life.

Application Process

The application process is fairly standard. Everything can be completed online at http://www.stolaf.edu/depts/math/budapest/. There is a basic form to fill out with a short essay that asks you to explain your math interests and how they would be furthered by participating in the term abroad. You also have to get two math professors to write recommendations for you.

Don't forget to also follow through with Union's term abroad requirements. Since you aren't technically participating in a Union program, there are extra forms and such to fill out. The rules may have changed now, but when I went to Budapest, I paid tuition to Union as if I was still on campus for the semester. Union then sent me a check while I was in Hungary that paid for any services that I would have been receiving if I were on campus (food, monthly rent, transportation, gym membership, etc.).

The Program

As for the logistics of the program, you can choose to live in an apartment with another student or you can live with a native family. I lived in an apartment with another student and it worked out great. Everyone I knew that lived with a family had a great experience as well.

I won't lie -- the math classes are not easy. The professors run things at a more accelerated pace than I was used to at Union. The semester is also a few weeks longer than a normal trimester, which means you end up covering a wider scope of material than you would cover in the same course at Union. However, the professors are always available for help and the material can definitely be mastered if you keep up with the work. I kept up with the workload the entire semester and had plenty of free time for sightseeing and travel. The program also offers certain classes that aren't offered at Union, so it is great to take advantage of that. I took a combinatorics class, which was extremely interesting.

My Experience

The city of Budapest is truly amazing. It is somewhat old and rundown in certain areas, but they were beginning a renovation plan when I was there and I can only imagine what it must look like now. The nightlife is a lot of fun (the city never sleeps, trust me) and there are countless places to do touristy things -- beautiful churches, Holocaust memorials, etc. Also, when I went, it was about 250 forints (Hungarian currency) to 1 dollar. I think it is somewhere around 200 forints to 1 dollar now. Either way, everything is very cheap. You can go out to dinner at very nice restaurants for approximately 1000-1500 forints, including drink, appetizer, and tip.

(**see Taurassi, on page 2**)

(**Taurassi, cont. from page 1**)
Getting around in Europe from country-to-country is as easy as traveling in the U.S. from state-to-state. Flights are fairly cheap and are of course very fast. Trains are even cheaper, but are obviously much slower. I took six weekend trips -- Florence by plane, Madrid by plane, Paris by plane, Vienna by train, Romania by train, and Munich by train (for Oktoberfest -- HIGHLY recommended!!). If you have never been to Europe, I strongly recommend traveling as much as possible. You never know how long it may be until you get to go back.

On top of all the travel and sightseeing, the people I met in the math program are people that I still stay in contact with today. I meet up with four or five of them at least once a year. College offers you a unique chance to study abroad that you may never get again in your life. Take advantage of it! If you're a math person, you should definitely consider this program.

If anyone has any questions or would just like to hear some more about the program, please feel free to email me: taurassi10@aol.com

## Where is Jackie Palermo '07?

Many of you know Jackie Palermo. She is a senior math major who has helped the Math Department over the last couple of years by assisting Linda Jorgensen in the math office and by tutoring in the Calculus Help Center. This term, though, she has been conspicuously absent. "Where is Jackie?" you ask. Recently, she wrote a letter to the Math Newsletter:

"Greetings from Abroad! I'm currently taking the term off from math to participate in a program called "Central Europe in Comparative Perspective." The program began in Tuebingen, Germany, moved next to Cluj-Napoca, Romania, and will finish in Budapest, Hungary. I am taking a variety of classes in each location including "Ethnic Relations in Multicultural Societies," "Civilization and Culture," "The Rise of a New Generation in Central Europe," and "Socio-economic and Political Transformations." Our "guide" through the program is a Hungarian Romanian woman who has experienced first-hand the difficulties of living in Romania as a minority and the transformation of Romania from a communist regime to a democracy. It's very interesting for me to get my first real taste of social sciences in the actual countries that are being studied.

"What about Math," you are probably thinking. I managed to take all the required "core" courses to fulfill the major as a sophomore, and I doubled up my junior year back in the winter. It's not that I needed a break; I just knew that this would be the opportunity of a lifetime. I've also done a little bit of research on the methods of Mathematics high school teachers and professors here in Romania. The high school curriculum does include more Math, but the teaching methods were identical to those in the U.S. Despite the oppressive Communist Regime that controlled all aspects of life, mathematicians were still able to communicate in the universal language of mathematics.

"On my own I've done quite a bit of traveling. I've been to Spain, Holland, France, and all over the Romanian countryside. This coming week I have a break that I will be spending in Prague and Vienna! I look forward to returning to my post in The Mathematics Office as well as beginning my thesis work with Professor Lesh on the topic of cryptology! Take care and have a wonderful winter break!"

Do you have any ideas for future newsletters?

E-Mail:
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***We're on the Web!***

*See us at:*
http://www.math.union.edu

*under* "Department Activities"

## Resources for Students

- Term Abroad … in Math! After reading about Vincent Taurassi's experiences, perhaps your interest in the Budapest Semesters in Mathematics program has been piqued. Professor Johnson has an informational brochure that contains an application to the program. From the brochure, "the deadline for applications for the Fall semester is April 30. … **Early applications (by as much as one year) are encouraged** and will be processed promptly. Applications are reviewed on a rolling basis."

## Problem of the Newsletter: November 3, 2006

Unfortunately, no one submitted a correct solution to last week's PON. A complete solution will be posted at the Newsletter distribution bulletin boards and posters.

Here is this week's problem: Consider a set S and a binary operation # on S, i.e., for every two elements a, b in S, there is an element denoted a # b in S.
Assume (a # b) # a = b for all a, b in S. Prove that a # (b # a) = b for all a, b in S.

Professor Friedman will accept solutions to this problem until 12:00 noon Thursday, November 9.