Mathematics Colloquium Fall Lineup

Colloquia are typically held Wednesdays 3:40—4:40 in Oren 113. Immensely appealing refreshments are served.

Sept.	7	The Annual Department Meet & Greet
	21	Robert Miner, Ph.D.
Oct. →	4[1]	Katy Micek, Augsburg College
	19	Mike Weimerskirch, Augsburg College
Nov.	2	Austin Wagner, Megan Sutherland
	16	TBA
Dec.	7	Steve Kennedy and Deanna

[1]Note that October 4 is a Tuesday. We meet 3:40 in Oren 113.

[1]This week's colloquium

Tango, Martensite, and a Drug-Delivery Device: Applications of Elasticity

Catherine A. Micek, October 4, 2011

In my research as applied mathematician, I develop and analyze elasticity models. These models mathematically describe materials that behave like a spring. Consider what happens when you pull the end of a spring. The spring stretches (i.e. it deforms) until you let go of the end. Once you've released its end, the spring returns to its original shape before you pulled it. When a material behaves similarly to a spring – that is, it exhibits the same ability to resume its original configuration after the force deforming it has been removed – then the material is said to have elasticity. In my talk, I'll give examples of how elasticity theory can explain very different physical phenomena. These examples will use elasticity theory to . . .

(1) Model a dance move from the tango

(2) Understand how martensite, a nickel-titanium alloy, can "remember" and return its original shape after it has been heated

(3) Understand how the swelling and collapsing of a polymer gel membrane can be used to operate a drug delivery device

The examples will include both a mathematical discussion and experimental demonstrations.

Katy Micek (right)

Problem of the week...

There were no solvers of the POTW from v25.01. Answer: Just over 15 meters. Most of us can't jump that high.
Here is the new POTW:

A *palindromial* is a polynomial whose coefficients read the same forwards as backwards; for example,

$$3x^4 - 2x^3 + 7x^2 - 2x + 3$$

is a palindromial. Suppose that $p(x)$ and its derivative $p'(x)$ are both palindromials. What is $p(x)$?

❖ Reprinted with permission from Bradley U's old 'POTW' page <http://hilltop.bradley.edu/%7Edelgado/potw/potw.html>

Puzzle of the week...

A. K. Dimore found that 1649 and 216 formed the solution to the PZOTW from v25.01. Here is new PZOTW:

You are given 18 golden coins, one of which is a fake. You do not know which one is the fake, but you do know that it weighs less than the others. How can you find the fake if you are given only three weighings on an ordinary balance (see the picture)?

❖Submit POTW & POZTW solutions to kaminsky@augsburg.edu, or under Ken's door at SCI 137E, or in the puzzles and problems box just outside of Su's office.

You think you have problems!

If you like solving mathematical problems, join a team for the Mathematical Association of America - North Central Section Fifteenth Annual Team Math Contest on Saturday, Nov. 12.

Augsburg students have fielded 25 teams since 1999. Be part of the tradition to represent Augsburg in this battle of math wits and challenge the likes of Carleton, Bethel, Macalester, Mankato, NDSU,St. Olaf, St. Thomas, Winona St, SDSU, and many, many more! Will Ausgburg prevail???

It could be up to you! Find out more and join a team! Contact Matt Haines (haines@augsburg.edu), SCI 137D).

Math Matters Public Lecture

The Math Matters Public Lecture Series of the Institute for Mathematics and its Applications presents at the University of Minnesota presents:

Flocks and Fleets: Collective Motion in Nature and Robotics, 7:00pm, Tuesday, October 11, 2011, Willey Hall 175

Naomi Ehrich Leonard (Princeton University)
http://www.princeton.edu/
~naomi/

Lecture Details
Refreshments: 6:30 p.m.
Lecture: 7 p.m.
Location: 175 Willey Hall,
225 19th Avenue South West
Bank, University of Minnesota, Minneapolis

Get directions at:
http://www1.umn.edu/twincities/maps/WilleyH/index.html

Tidbits of the Week (TOTW)

a) The answer is 37,607,912,018. What is the question?
b) The answer is 195,249,054. What is the question?
  If you find either answer, let me know what you get and you will get your name in print.

You will find the answer in the next *L'Augarithms*.

Open House*

UNIVERSITY OF MINNESOTA—Twin Cities
Biostatistics Graduate Program

Friday, October 7, 2011
Coffman Memorial Union
President's Room — 3rd Floor
10:00 a.m. to 2:30 p.m.

Learn about: curriculum
              financial aid
              hands-on research
              career opportunities

RSVP by Tuesday, October 4 at http://www.sph.umn.edu/biostatistics

On Friday, October 7, 2011, the Division of Biostatistics, School of Public Health will host a half-day of short talks and information sessions on:

- MS, MPH, and PhD programs,
- the research they do, and the many ways in which their students participate in that research,
- job prospects in biostatistics,
- the financial aid most students receive, and
- the application process

Lunch and a tour will also be provided, and your parking will be paid for.

*For more information, see Ken Kaminsky OR http://www.sph.umn.edu/biostatistics

Cartoon Corner (from the archives [1992])

Academia Nuts