Mathematics Colloquium

Katie Ziegler-Graham, a biostatistician at St. Olaf, will be speaking on Tuesday, March 4, at 4:00 p.m. in CMC 206.

Using Statistics to Count: Modeling Incidence and Forecasting the Worldwide Prevalence of Alzheimer’s Disease

Abstract: Alzheimer’s disease (AD) is a chronic disease that affects the elderly throughout the world. It is not well understood how many people have AD and as populations become older, the number of persons living with AD will increase. It is important for planning purposes to be able to accurately predict how many people will be living with AD in the future. An important component of forecasting disease prevalence is the age-specific risk of developing the disease. I will present work and focus on modeling strategies that were employed as part of a meta-analysis on AD incidence rates. We used these incidence rates in conjunction with UN worldwide population projections to forecast AD prevalence. A stochastic, multi-state model was used which not only allowed us to obtain prevalence estimates, but to evaluate the potential impact of interventions that delay disease onset or progression.

Next Stop On The Tour

The tour will be guided this time by Steve Kennedy, who will tell us why “Two heads are better than none.” The talk will be on Friday, February 28, in CMC 206 at 3:30, and there will be space available for interested folks who are not enrolled in Math 206.

Climate Change Lunch

Andrew Roberts, a 2007 Carleton grad, just finished his PhD in mathematics at North Carolina. He will be on campus on Wednesday, March 5, and he is eager to talk with current Carleton math majors about graduate school, applied math, and the mathematics of climate models (his area of specialization). There is a 12:30 p.m. lunch scheduled at Chapati, and the department will buy lunch for the first eight students who sign up with Sue Jandro (sjandro).

Pizza Trophy Returns To Carleton

On Saturday, three teams of Carls traveled to the University of St. Thomas to compete in the 22nd annual Konhauser Problemfest, braving icy roads to make the journey. At the end of the day, two of the top five teams were from Carleton. Frank Yang and Raphael Lui finished fifth, despite being only two in a competition where most teams had three; and Jacob Spear, Michelle Mastrianni, and Isaac Garfinkle took home first place. As a result, the pizza trophy (a handsome granite model of a dissection proof of a theorem in geometry) will spend the next year in the department reception area. Kudos to all who competed!
**ACM Study Abroad**

Are you considering a study abroad or off-campus program? There are lots of great options available through Associated Colleges of the Midwest (ACM). Most ACM programs feature independent study, research, or internship opportunities. All ACM programs are designed for students at liberal arts colleges, making them perfect for Carleton students. Specifically for math, there is the Oak Ridge Science Semester. The deadline for ACM programs is Saturday, March 15. Make sure you speak with someone in the Off-Campus Studies Office before starting the Carleton application and approval process! For more info, visit: www.acm.edu/programs.

**Summer Opportunities**

3Red, a small proprietary trading company in Chicago, is looking for a college student with a quantitative background for a paid internship in algorithmic trading this summer. The intern would work very closely with a small trading team, and would be involved in both trading and research projects. It would be a great opportunity for someone with a math or CS background who wants to see if a career in trading is a good fit. Familiarity with programming in python and with a statistical package for data analysis would be major plusses. To hear more, submit your name at www.3redgroup.com/careers and mention that you are interested in the “algorithmic trading internship.”

The Department of Mathematics at Boise State University will host an interdisciplinary undergraduate research program, Complexity Across Disciplines. This intensive program will expose up to ten undergraduate students to advanced topics in mathematics and multidisciplinary applications. The program aims to immerse undergraduate students of diverse backgrounds in all facets of research in mathematics and in applications to information security or the life sciences in a culture of close and daily collaboration with faculty. The application deadline is March 1. For more info, visit math.boisestate.edu/reu.

**Problem of the Week**

Show that, if $A, B,$ and $C$ are odd integers, the line $Ax + By = C$ cannot intersect the parabola $y = x^2$ at a rational point.

**Acknowledgments**

There were lots of submissions this week! Jacob Spear '16 and Frank Yang '17 both submitted correct solutions for Weeks 6 and 7, and Frank submitted a correct solution for Week 5 as well. Each should stop by the math department office for a prize from the BBOP! We also received a solution with Mathematica analysis for Week 7 from John Snyder in Oconomowoc and an incorrect solution for Week 3 from a student.