

MSCS



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Department of Mathematics, Statistics and Computer Science
St. Olaf College, Northfield, MN 55057

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This Week's Colloquium

Title:	Catastrophe Modeling: Deconstructing an Exceedance Probability Curve
Presenter:	Jon Christianson ('02) and Kate Tummers ('08)
Date:	Tuesday October 7 th
Time:	1:30 pm
Location:	SC 278

Abstract: Catastrophe modeling estimates the financial impacts of disasters – whether of natural or human origin – by simulating scenarios based on historical data and mathematical models. This analytical profession draws upon three different disciplines: actuarial science, geophysics and engineering. At Collins, we are focused primarily on catastrophes that are infrequent but produce highly severe outcomes that affect the reinsurance industry; for example, earthquakes, hurricanes, terrorism, pandemics, etc.

The presentation **Deconstructing an Exceedance Probability Curve** will examine a key statistical measure utilized in catastrophe analytics. The exceedance probability, or "EP", is represented as a curve which defines the probability of various levels of potential loss for a defined structure or portfolio of assets at risk of loss from catastrophic hazards.

Because catastrophe modeling as a professional discipline is only 15 years old, many high-caliber students we would hope to attract are not aware of the opportunities within our industry. We believe that, as graduating seniors learn more about the opportunities and challenges of catastrophe modeling, and the increasingly important role it will play in business and society in the future, they will find it an interesting, attractive and exciting career option.

Bio: Jon Christianson is a Senior Catastrophe Risk Consultant within the Analytical Services Group at Collins. His duties at Collins include acting as the primary modeler for several large residential insurance companies exposed to earthquake and hurricane risk, as well as a number of Midwest regional insurance carriers. Mr. Christianson has a B.A. in Economics with a concentration in Management Studies from St. Olaf College.

Kate Tummers is a Catastrophe Risk Consultant at Collins. As a recent addition to the Analytical Services Group, Ms. Tummers has been integrated into catastrophe modeling projects that include earthquake, hurricane and severe convective storm risk. Ms. Tummers has a B.A. in Mathematics with a concentration in Statistics and Management Studies from St. Olaf College.

Actuarial Fair

You are cordially invited to the Tenth Annual Actuary Club Career and Internship Fair at the University of Minnesota. It will take place on Monday, November 3, 2008, from 1 – 4 P.M., at the Mississippi Room in the Coffman Memorial Union. This event is a great way to create network opportunities between actuarial students and the business community. Companies from around the Minneapolis and St. Paul metro area, as well as a few from out of state, will be in attendance. Companies will be searching for students attempting to fill fulltime and/or internship openings in their particular company. They also want to provide information about actuarial careers and what their company has to offer. Students should dress business professionally and come prepared to market their talents. Bringing several copies of your resume is strongly encouraged. Any questions concerning the fair can be directed to: Helen Muller (mulle179@umn.edu) or Stephanie Rose (rosex252@umn.edu). We hope to see you there!

Operations Research

One of the advantages of studying mathematics at Saint Olaf is that the size of our program allows us to offer courses not often found in other undergraduate mathematics departments. One of those courses is the applied mathematics course called Operations Research (Math 266), being offered this spring. Operations Research, also known as management science, is the mathematical study of the optimal way to manage companies, governmental agencies and programs, critical wildlife habitat, financial portfolios or any other situation where decisions need to be made. The key word here is "optimal," meaning the best possible. In this course we focus on small problems while learning the techniques, followed by a

chance to tackle a life sized problem with hundreds of decision variables and several hundred constraints. The prerequisite for this course is Linear Algebra (Math 220). While Probability (Math 262) is recommended, it is not required. If you have any questions, please contact Steve McKelvey.

Teach for America

By the time they reach eighth grade, students in low-income areas are on average three grade levels behind their higher-income peers in math. Teach for America is building the movement to eliminate educational inequality by recruiting recent college graduates to commit two years to teaching in urban and rural public schools. Students from all backgrounds and academic majors are accepted, but there is a particularly strong need for math and science teachers. Teach for America volunteers receive full first-year teacher salary and benefits, financial aid, an AmeriCorps education award (if eligible), and student loan forbearance. To learn more, contact Leif Moe-Lobeda at moelobed@stolaf.edu.

Problem of the Week

Find all integer solutions (x, y) to the equation $xy = 5x + 11y$.

Solutions to last week's problem are posted at SC 222. Send your solution to this week's problem to Prof. Gower (SC 222, gower@stolaf.edu) by Friday, October 31, 2008.

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If you would like to submit an article or math event to be published in the Math Mess, e-mail kochc@stolaf.edu.