

# MSCS



# Mess

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

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## **Weekly Colloquium**

**Title: Practicum and Geneva Presentations**

Speaker: Students from the Practicum and  
Geneva Interim Classes

Date & Time: Tuesday, April 5, 1:30pm

Location: RNS 390

### **Practicum: City of Northfield**

**Team: Lucas Antony, Hongxiao Gong, Amy  
Mund, Wes Olson, and Jeff Stamp.**

The St. Olaf Utility Team (STOUT) was charged with providing an analytical tool for the city capable of performing real-time sensitivity analyses of the city's newly implemented rate structure. The team's response is the STOUT software package, the product of three weeks of intensive excel programming. The software has four main components. The first is the Rate Structure Investigator, a very basic tool that takes a given rate structure as an input, and produces the resulting annual revenue for the city utility fund, assuming 2010 usage remains unchanged. The second is the 5 Year Planner, a more complex tool that works logically in the opposite direction of the Rate Structure Investigator; given certain financial requirements, the 5 Year Planner will produce the required rates to achieve such requirements. The third component of the STOUT software package is the 25 Year Planner. This is an extension of the 5 Year Planner, but also has the ability to take into account large capital investment projects 20-30 years in the future. The last component of the

software is the Residential City Comparisons tool, a worksheet that, given a specified rate structure in Northfield, compares bills of typical accounts in Northfield to what they would be under the rate structures of surrounding municipalities. The city will hopefully be able to utilize the software package to achieve its goal of implementing a rate structure that not only leaves each utility enterprise fund self-sustaining but helps accumulate a capital reserve for future financial security.

### **Geneva: Pandemic Preparedness**

**Team: James Clark, Shanon Fast, Caroline  
Groth, Vanessa Kleckner, and Sara  
Schaenzer**

During the month of January, students worked as interns at the World Health Organization in Geneva, Switzerland as part of the Statistics 285: Global Health and Biostatistics interim program. While in Geneva, this group worked to change the World Health Organization's pandemic preparedness checklist into an analysis tool. Specially, this group analyzed data on pandemic preparedness collected prior to the H1N1 pandemic and evaluated what items on the checklist appeared to be the most valuable. Using this group's analysis, the World Health Organization hopes to adjust the pandemic preparedness checklist, and eventually compare checklist scores to measures such as vaccine coverage during the H1N1 pandemic to provide a better sense of how preparedness helped countries during the H1N1 pandemic.

## Student Biographies

### Lucas Antony:

I am majoring in mathematics and chemistry. I enjoy running and biking as well as spending time with my friends. Most students on campus would probably recognize me from the Caf as I've been working there since my first year. I will be attending graduate school next year to earn a Ph. D in a program that integrates mathematics and biology/ chemistry. I hope to become a part of the computational side of medical or physiological research.

### Jeff Stamp:

Home: Casper, Wyoming

Year: Graduating this spring

Majors: physics / math, stats concentration

Activities: soccer, alpine skiing

Other campus affiliates: Society of Physics

Students, CIR, Academic Support Center tutor

Plans next year: graduate school in mechanical engineering

Free time: chess, reading books, playing Risk

### James Clark:

James is a senior Biology and Chemistry major concentrating in Statistics. He is interested in improving healthcare through clinical translational research, and as such will be attending medical school next year.

Additionally he plays volleyball as a captain of the St. Olaf Club Volleyball team.

### Shannon Fast:

Shannon is a junior from Lincoln, Nebraska.

She is a math and psychology major with a statistics concentration. She enjoys playing guitar and cooking in her spare time.

### Caroline P. Groth (Carrie):

Carrie is a junior psychology major, statistics concentrator from McFarland, Wisconsin. She is currently the president-elect of Psi Chi, the national honors society in psychology. As a CIR Fellow, she is studying the impact of influence strategies on health behavioral change. Carrie hopes to go on for graduate work in either

quantitative psychology or biostatistics.

### Vanessa Kleckner:

Vanessa is a Math and Biology major with a Biomedical Studies Concentration. She plans to attend medical school after senior year, possibly for an MD/PhD degree, in order to conduct health-related research. Vanessa is also a member of the St. Olaf Women's' Golf team and the Vice President of St. Olaf's chapter of Mathematical Association of America.

### Sara Schaezner:

Sara is a Junior majoring in Chemistry and Spanish. She plans on attending medical school after graduation. On campus she is a program director for Reaching Our Goals, a mentoring program for Latino youth and a Junior Counselor.

## Problem(s) of the Week (POW)

It's been way too quiet on the POW solution front, perhaps because of the recent break.

So we'll allow an extension to an earlier gaming-related problem:

**Horse Race:** Four horses --- Al, Bob, Charlie, and Dan --- complete in the Alphabet Derby. How many different finishing orders are possible if no ties are allowed? What if ties are allowed?

and pose another one for extra glory:

**Fun for Three:** Alice, Bob, and Carmen have two fair coins: a penny and a nickel. Alice and Bob can play a fair game by flipping, say, just the penny. But Carmen wants in on the fun, too. Can a fair three-person game be designed around flipping (once each) both the penny and the nickel? What if the nickel can be made unfair, with heads probability  $p$ ?

## Another sure sign of spring!!!

The N-th Annual MSCS Recital will be held at 7:00pm on Wednesday, April 6th in the main lounge of Ytterboe Hall. This is one of THE big social events within MSCS. The word "recital" hardly begins to convey the feel of this amazing experience. Imagine tables of good food (from faculty, not from a food service). Imagine a room full of people of all ages, from young children to, um, more senior faculty, milling about enjoying each other's company in a fun, relaxed setting. Imagine Tina Garrett telling bad jokes in a dog suit. Imagine Steve McKelvey trying, yet again, to get through a short flute tune without blowing it. Imagine your favorite professor being mercilessly parodied by woefully unappreciative students. Imagine your most talented classmates performing truly remarkable pieces of music, poetry and theater. Imagine discovering an important aspect of a friend or teacher that is usually hidden during class time and office hours.

All these experiences, and more, may await you at the MSCS recital. All who consider themselves to be friends of the MSCS Department are welcome to attend and/or perform at this event. If you have a talent, big or small, that you'd like to share, please do so. It's a kind audience.

So, set aside a couple of hours on the evening of April 6th for the MSCS Recital. If you'd like to perform, please contact Steve McKelvey (mckelvey@stolaf.edu).

## Wanted: Experienced Ikea builder

The MSCS department has an Ikea bookcase that needs to be put together. If you have experience following Ikea's wordless directions, are already on the MSCS payroll, and want to earn a bit more money, send your qualifications to Prof. Dietz by email (dietz@stolaf.edu). You'll be paid for a minimum of 2 hours of work, though it shouldn't take that long to complete.

## Mathematics Awareness Month

April is Mathematics Awareness Month! The theme for this year is "Unraveling Complex Systems." Mathematics Awareness Month is sponsored by Joint Policy Board for Mathematics, The American Mathematical Society, the American Statistical Association, the Mathematical Association of America, and the Society for Industrial and Applied Mathematics. For more information visit <http://mathaware.org/mam/2011/>.

## Backgammon Club

St. Olaf is famous for its math department, and Backgammon, is famous for attracting top mathematicians. The game is ALL MATH, probability, odds. That's why there are Backgammon Clubs at Harvard, Penn, UCLA, Yale, Northwestern and dozens of other great colleges around the U.S. We'd love to start one at St. Olaf.

The US Backgammon Federation will supply backgammon boards, coaching, and organize competition ON LINE (no travel expense) against other schools.

All of our clubs welcome both faculty and students. If interested contact Phil Simborg (psimborg@sbcglobal.net) of the US Backgammon Federation and visit [www.usbgf.org](http://www.usbgf.org).

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*If you would like to submit an article or math event to be published in the MSCS Mess, e-mail [holmc@stolaf.edu](mailto:holmc@stolaf.edu)*