

MSCS



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Department of Mathematics, Statistics and Computer Science
St. Olaf College
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This Week's Colloquium

Title:	Catastrophe Modeling
Speakers:	Jon Christianson ('02) and Jon Knutzen
Time:	1:30 pm Tuesday, October 23rd
Place:	SC 182

Abstract: Catastrophe modeling estimates the financial impacts of disasters – whether of natural or human origin – by simulating scenarios based on historical data and physical 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.

Speaker Sponsored by the St. Olaf BioMathematics Working Group

Title:	Salmon in the Columbia River Basin: Politics, Courts and Science
Speakers:	Prof. Rollie Lamberson
Time:	7 m Tuesday, October 23rd
Place:	SC 182

Prof. Lamberson is a founding member, Fellow and Past President of the Resource Modeling Association (RMA), an international interdisciplinary professional organization promoting the design and use of mathematical models in all areas of natural resource management. He is also the editor of the journal "Natural Resource Modeling" and a protege and colleague of another RMA Fellow, Colin Clark, who visited Saint Olaf two years ago as part of the Kleber-Gery Lecture Series.

This talk is recommended for anyone who is interested in the interplay between politics, economics, law and science in the real world management of scarce yet important natural resources.

Hey, Hey, Hey, Hey, Hey The Real Analysis Exchange Needs You!!

Are you a first year student, interested in mathematics, not computer phobic and would like a solid, good paying job for your next three years at St. Olaf? Then does Humke have the deal for you!!!

The Real Analysis Exchange is a journal that he edits, and he needs help. This job will pay for your training and then 3-4 hours of editing type work per week. If you think you might be interested, drop Humke an email note at analysis@stolaf.edu. Hey, what can you lose? This could be great!

Computers and War

Last week's column described ballistics research during World War I. Following World War I, research in ballistics continued in the Ballistics Research Laboratory at the Aberdeen Proving Grounds. One of the main functions of the research group was to produce firing and bombing tables. The firing table tells a gunner at what angle to elevate his weapon to reach a certain distance, taking into account factors such as wind, temperature, and weight of the ammunition shells. These tables existed as small booklets or small analog computers attached to guns. To increase the speed of calculating these tables and improve their accuracy, the staff at Aberdeen investigated the use of calculating devices. A Bush differential analyzer was installed in 1935, and a tabulator and multiplier from IBM were added in 1941. With the outbreak of World War II, the staff could not keep up with the demand for new tables. They contracted to use a faster analyzer at the University of Pennsylvania but still needed more computing capacity. To meet this need, John W. Mauchly, a physicist, and J. Presper Eckert, Jr., an engineer, at the University of Pennsylvania proposed development of the first electronic computer. The Army funded the project, and the development occurred at the University of Pennsylvania. The result was ENIAC (Electronic Numerical Integrator and Computer), which was completed in the fall of 1945. ENIAC was moved to Aberdeen in 1947, where it continued in operation until 1955. Applications it supported in addition to ballistics included weather prediction, atomic energy calculations, and wind tunnel design.

For more on ENIAC and its precursors, visit the ENIAC Museum Online at <http://www.seas.upenn.edu/~museum/>

References: "ENIAC: The Army-Sponsored Revolution" at <http://ftp.arl.army.mil/~mike/comphist/96summary/index.html>

The Computer from Pascal to von Neumann by Hermann Goldstine

-Kay Smith

Problem of the Week (POW)

$$\begin{aligned} \text{If } a + b + c &= 3 \\ a^2 + b^2 + c^2 &= 5 \\ a^3 + b^3 + c^3 &= 7 \\ \text{Then } a^4 + b^4 + c^4 &= ? \end{aligned}$$

Solution submitted verbally by Prof. Corzatt

$$8(a+b+c)(a^3+b^3+c^3)+3(a^2+b^2+c^2)^2+(a+b+c)^4-6(a^2+b^2+c^2)(a+b+c)^2=6(a^4+b^4+c^4)$$

So $a^4 + b^4 + c^4 =$

$$[8(3)(7) + 3(5)^2 + (3)^4 - 6(5)(3)^2]/6 = 9$$

Further Problem:

Can you go one step farther?
What is $a^5 + b^5 + c^5$?

Solutions to the Problem of the Week should be submitted to Mike Weimerskirch's mailbox in OMH 201.

International Research for Undergraduates in Real Analysis and Dynamical Systems

With significant support from the National Science Foundation and St. Olaf College, the Department of *Mathematics, Statistics and Computer Science* will sponsor four undergraduate research scholars during summer of 2008. These undergraduates will join teams of professional research real analysis at one of two host institutions, Lodz University in Poland or Selesian University in the Czech Republic. See our website for additional info: <http://www.stolaf.edu/people/humke/REU2005-2007/REUintro.html>.

The Deadline for all materials is **Nov. 9, 2007**

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