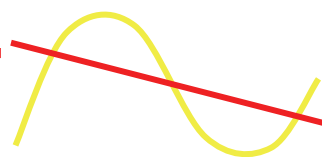


Functions and Lines



Volume 3, Issue 2

Winter 2007

Simpson College
Mathematic Department

Important Dates:

- Senior Seminar Mid-term Presentations, Sunday, February 25, 2007.
- Midwest Undergraduate Mathematics Symposium, Simpson College, Saturday, March 31, 2007.
- Senior Seminar Final Presentations, Sunday and Monday, April 22 and 23, 2007.

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Modeling is for High School Students, Too

Each February, Simpson College mathematics students compete in the Mathematical and Interdisciplinary Contests in Modeling (MCM and ICM) sponsored by the Consortium of Mathematics and Its Application (COMAP). COMAP also sponsors a contest for high school students in November called HiMCM.

The Simpson mathematics faculty and students held a workshop for students from Roosevelt High School and Central Academy in October 2006 to help them prepare for the HiMCM. At the workshop, groups of 3 high school students and 1 to 2 Simpson students worked together on short prob-

lems similar to those the high school students would encounter in the contest. We also talked about the importance of strong communication and time management skills for this type of contest.

students held a mock HiMCM and wrote solutions to problems on sand removal and building evacuation.

Six teams from Central Academy participated in the HiMCM under the supervision of Michael Marckett. Even though it was the first time students from Central Academy participated in the modeling contest, they had excellent results. Four teams earned rankings of Meritorious and the other 2 received Honorable Mention rankings.

We will continue to hold workshops and hope that more high schools participate in the contests in the future.



Jonna Anderson (center) shares her knowledge and experiences with Roosevelt seniors, Drew Kinser (left) and Ellen Held, and 8th grader, Joel Schneider.

Dr. Spellerberg ran a similar workshop for students at North Cedar High School. The North Cedar

Simpson Alums Successful in Actuarial Programs

Two Simpson alums have become actuarial fellows after finishing all the exams.

Lindsay Coffman Foster (2002 Math) received a masters in Actuarial Science from the University of Iowa. She finished her exams in the fall of 2006, and she works for Principal in Des Moines.

Marcy Baker went to work

for Allied Insurance after graduating from Simpson (2001 Math, CompSci). She finished her actuarial exams in Spring 2006 and currently works for Midland Life.

Robert Delsing (2006 Math, English) is working on his masters in Actuarial Science at University of Iowa. Last semester he passed his second actuar-

ial exam. He plans to complete all the exams and hopes to work for an insurance company.

Macy Allen (2006 Math) works for EMC National Life and has started the exam process.

Courses in mathematics and finance, along with exam preparation workshops, prepare students well for actuarial work.



Jean Clipperton presents her research on radio channel assignments at the Argonne Undergraduate Research Symposium.

“Mathematics is the art of giving the same name to different things.”

-Henri Poincaré

Students Complete a Variety of Research Projects

Undergraduate research is a big part of the mathematics program and our students participate in research in many ways.

Last summer three of our students participated in Research Experiences for Undergraduates (REUs). Jean Clipperton studied applications of graph theory to radio channel assignments at Valparaiso. She continues her work as part of a degree in Mathematics with Honors and will present her final thesis this spring.

Jonna Anderson and Tracy Robson used differential

equations to model animal cannibalism at an REU at the University of Nebraska.

Jonna, Tracy and Jean have presented their work at the Argonne National Laboratories and at the Joint Meetings of the MAA and AMS.

All seniors at Simpson complete a research project as part of Senior Seminar. Last fall, Laura Preston and Scott Bonz wrote papers on their work in the mathematics of origami.

This spring, we have seven students working on projects. Randall Meyer and Jeff Travis are investigating mappings of

complex functions and solutions to Dirichlet problems. Andrew Gorton is working on labeling graphs with graceful labels.

Mike Tiano, David Williams and Natalie Chizek are working on Auction Theory, the Gambler’s Ruin and Benford’s Law, respectively, all aspects of Game Theory. Alicia Uhde is researching set properties in a topological space.

All students doing research will present a paper or poster at the Midwest Undergraduate Mathematics Symposium on March 31, 2007.

Alumni News

- James Hickman (1950 Mathematics) passed away on September 10, 2006, at the age of 79. Hickman was a noted researcher in the field of actuarial science. Steve Lehmann of *Contingencies* magazine says of Hickman that “he came to embody the essence of the actuarial profession for me.” He taught at the University of Iowa, and later served as the dean of the business

school of University of Wisconsin-Madison from 1985-90. Associate dean of the business school, Jed Frees said, “Jim was a giant in the field, and was internationally respected for his work.” He is survived by his wife, Margaret, and children Charles, Donald and Barbara.

- Heather Layman (2000 Mathematics, Theater) is touring with the musical

The Light in the Piazza as the master electrician. After graduating from Simpson, Heather obtained a masters in lighting design.

- Chip Brundage (1999 Mathematics) is the assistant track and field coach for the Drake Bulldogs. Chip taught and coached in high school before being hired by Drake.

Mathematics Department Attends National Meeting



Shane Akers, Dillon McKelvey and Nick Hay divide New York state into equitable congressional districts.

Members of the Simpson Mathematics Department attended the Joint Meetings of the Mathematical Association of America (MAA) and the American Mathematical Society (AMS) in January 2007 in New Orleans.

Jean Clipperton, Tracy Robson and Jonna Anderson presented posters of their summer research at the Undergraduate Poster Session at the meeting. Tracy and Jonna’s poster on models for

animal cannibalism won an award at the session.

In New Orleans, Dr. Deb Czarnecki attended meetings of Project NExT, a program for the professional development of new college professors. Deb was selected for the two-year program in 2006, and will be going to MathFest, the summer meeting of the MAA, in August 2007 in San Jose, California.

Dr. Murphy Waggoner co-chaired three sessions of contributed papers on “Getting Students to Write and Discuss Mathematics” at the meetings. The contributed paper sessions will also be held at MathFest in August 2007.

Dr. Bill Schellhorn also attended the Joint Meetings in New Orleans.

Competitions Draw Simpson Students

Two competitions, the Putnam Exam and the Modeling Contests, give our students the opportunity to hone their problem solving skills and to compare their performance with other students.

The Putnam Exam is a national competition held the first weekend in December and is for undergraduate mathematics students. The exam has 12 problems and students have 6 hours to complete it. The exam is

difficult, and the median score is usually a 0 or 1 out of 120 points. This year, 5 students spent a Saturday in December working on the problems on the exam.

The MCM and ICM, sponsored by COMAP, is held early each February. Each school is limited to 7 teams of 3 students, and this year Simpson filled 7 teams and had a waiting list of students for the competition.

The international modeling contests give teams of students an open-ended, real-world problem to work on for 96 hours. At the end of that time, they submit a paper describing the solution.

The results of both competitions will be available in March.



Prabal Thapa, Tim Fairfield, Tracy Robson, Jean Clipperton and Nick Savov competed in the Putnam Exam.

Sloan Retires, Schellhorn Hired

After 19 years as a member of the Mathematics Department, Dr. Bruce Sloan will retire at the end of May. In his time here, he has contributed to the college in many ways, including being Division Chair.

Dr. Sloan was instrumental in the development of Math 265: Introduction to Advanced Mathematics. Called a "bridge" course, this course is essential for helping students in mathematics move from the computational

mathematics of Calculus courses to the theoretical material in courses such as Abstract Algebra and Real Analysis.

Homecoming was an exciting time this year because 32 mathematics alumni came by to say farewell to Dr. Sloan and Dr. Dunning, who retired in 2005. The Math Club honored Dr. Sloan by unveiling their t-shirt at the Homecoming celebration: a collection of "Sloan quotes."

Dr. Bill Schellhorn has been hired to fill the position left vacant by Dr. Sloan. Dr. Schellhorn received his Ph.D. from Louisiana State University in 2005 and has been teaching as an adjunct here at Simpson since the fall of 2005.

We wish Bruce and his wife, Bev, well as they settle into their new home in Montana, and we welcome Bill as a permanent member of the department.

"A mathematician, like a painter or poet, is a maker of patterns."

- G. H. Hardy

Piecewise News

- Mathematics Day 2006 was held on Saturday, December 2. This annual event brings prospective mathematics majors, current students, alumni and other members of the mathematics community together, and is intended to show students the diversity of opportunities available in mathematics.
- Fourteen Simpson students, including three mathematics students, presented papers at the Summer Research Sym-

posium on September 27 in Jordan Lecture Hall.

- Dr. Bill Schellhorn's article "Filamentations for Virtual Links," appeared in the Journal of Knot Theory and Its Ramifications in March 2006. A second article, "Virtual Strings for Closed Curves with Multiple Components," has been accepted for publication in the Mathematical Proceedings of the Cambridge Philosophical Society.
- Drs. Murphy Waggoner

and Rick Spellerberg will present an hour-long workshop on the HiMCM, COMAP's modeling contest for high school students, at the meeting of the Iowa Council of Teachers of Mathematics in Ankeny on February 23rd.

- Through the support of the Math Club, this year the MCM and ICM were funded through the student senate. The food for the contests was purchased through the generous donations of alumni and faculty.



Lynnette Snyder explains her ideas for solving a problem about allocating kidneys for transplant.

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Mathematic Department**

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**Do Mathematics and
You Can Do Anything!**



The Mathematics program at Simpson is designed to give students an opportunity to develop a mathematical foundation as a tool for understanding the world and society in which they live. The curriculum allows students to develop their problem solving and deductive reasoning skills and enhances their ability to model the present and predict the future status of systems in a changing world.

The department prepares students for either graduate study, careers in secondary education or employment in a mathematically related field. The teaching and learning process incorporates modern technology to assist students in a developing critical analytical skills. Oral and written communication are integrated into the program to help students develop the confidence and poise needed to fully participate in their chosen career.

Social Events Are Important to Our Community



Tania Quiroz, a sophomore mathematics education major, at the Fall Ice Cream Social.

We currently have 60 majors and a dozen minors in mathematics, and social events are an essential part of this large community.

The year started with an Ice Cream Social in the Carver Atrium to let out new students know what happens in the department.

There is a strong rivalry in the department between the Packers and Vikings fans, and so it was only appropriate that there was a party at Dr. Spellerberg's house for the Packers/Vikings football

game this past fall. Drs. Czarneski and Schellhorn hosted a junk food potluck for the Mathematics Club during the Super Bowl.

To celebrate the research done by our seniors during Senior Seminar, we have a dinner for all students in the department. Juniors are especially eager to talk to the seniors about their experiences during this informal gathering.

The Mathematics Club hosted a game night, the Christmas party and a kick-off party for

the MCM and ICM modeling contests. They also decorated Carver Science Hall for Christmas.

Homecoming was a special time for Dr. Sloan and Dr. Dunning because many of our alums came back to thank them for their years of service to the department.

The year will be rounded out by the Senior Bash where the entire mathematics community will help send our seniors off to their jobs and graduate programs.