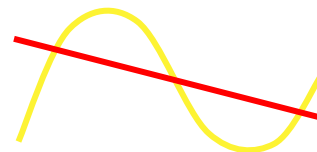


Functions and Lines



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Departmental Events 2006-2007

- October—Colloquium speaker
- November - Visit Argonne National Laboratories, colloquium speaker
- December—Putnam Competition
- February—Modeling Contest (Page 4), colloquium speaker
- March - Colloquium speaker
- March - Iowa Mathematics Competition
- April - Midwest Undergraduate Mathematics Symposium, Senior Seminar final presentations, colloquium speaker
- May - Senior Celebration

Ten Students Complete Senior Papers

Ten mathematics majors participated in research projects required for the major. Nine of these students were enrolled in Senior Seminar in spring 2006 and worked with Drs. Waggoner, Spellerberg, Sloan, Czarneski and Schellhorn.

Angela Servais, Brad Knox and Melinda Gatton studied with Murphy Waggoner and wrote papers on the mathematics of origami, applications of complex analysis and dynamical systems, respectively. Chase Richardson studied evolutionary game theory and why humans are the dominant species with Rick Spellerberg. Bruce Sloan supervised Macy Allen, Amber Woodley

and Mandi White in their endeavor to understand topics in point set topology. Prakash Kayastha worked with Deb Czarneski on zeta functions of finite graphs. Robert Delsing and Bill Schellhorn studied equidistant letter sequences and their significance to the Bible Codes. Shikha Basnet completed the requirements for honors in mathematics by continuing to work with Dr. Spellerberg

on applications of game theory.

These students presented their work at the 2006 Midwest Undergraduate Mathematics Symposium and in a series of talks at the end of the spring semester.



Macy Allen, Angela Servais, Shikha Basnet and Prakash Kayastha relax after finishing their senior seminar papers and are ready for graduation.

Actuarial Exam Preparation

Dr. Spellerberg offered a class in May Term to help 7 students prepare for the first actuarial exam. During May, the students built on the background they received in Probability and Statistics classes to prepare for the first of the exams in a series

offered by the Actuarial Society.

The students who sat for the exam were Robert Delsing, Brad Knox, Natalie Chizek, Alicia Uhde, Scott Bonz, David Williams and Mandi White. Robert, Mandi and Brad gradu-

ated in May. The other 4 students will be seniors next year.

All the students except Natalie took the exam in May and will receive their results sometime in July. Natalie will be taking the exam in August.

Piecewise News

- Rick Spellerberg presented a paper on evolutionary game theory to the Iowa Section of the Mathematical Association of America in Ames this April. All the faculty of the Simpson Mathematics Department attended the Iowa Section meeting this year.
- Robert Delsing will be starting a graduate program in actuarial science in the fall at University of Iowa.
- Chase Richardson has been offered two jobs at Allied Insurance following his graduation from Simpson.
- Murphy Waggoner attended the Joint Meetings of the AMS and the MAA in San Antonio this January. While there she chaired a contributed paper session on Getting Students to Write and Talk about Mathematics.
- Bruce Sloan has announced his retirement and will be leaving Simpson after 17 years of service in May 2007.
- Deb Czarneski is finishing up her first year at Simpson. Besides teaching classes, Deb worked with the Math Club and was a research advisor as part of Senior Seminar.

Mathematics seems to endow one with something like a new sense.—Charles Darwin

- Bill Schellhorn will be continuing as an adjunct professor next year. He will be teaching Mathematical Modeling, Intermediate Algebra, Calculus II and Elementary Statistics.

Simpson Hosts Third Symposium

On April Fool's Day 2006, the Simpson Mathematics Department hosted the third Midwest Undergraduate Mathematics Symposium. We host the symposium in

order to give undergraduate mathematics students throughout Iowa a place to share the work they have done and to be able to spend the day with other people who are excited about mathematics.

There were 56 people at the symposium, representing 10 academic institutions. Eight students presented their work at a poster session, and 12 students gave oral presentations. The topics ranged from the calculation of the digits of π to a matrix version of tic-tac-toe; from applications of game theory to biology to secret codes in the Bible; from describing chaos to deciding why humans are the dominant species. The student presenters were from Simpson College, Des Moines Area Community College and Central Academy.

The plenary addresses were presented by Dr. Timothy Breitzman from the University of Dayton Research Institute. Dr. Breitzman gave two presentations on the mathematics used in material science, in particular the mathematical study of cracks.



Macy Allen talks to symposium participants about connected sets and her senior project in point set topology.

Simpson Students Chosen for Summer Research Programs

Research Experiences for Undergraduates (REUs) are offered by a variety of colleges and universities each summer. The programs are competitive, and to be accepted into a summer REU is an indication of strong future potential. This year, three Simpson mathematics students were chosen to participate in two REU programs.

Tracy Robson and Jonna Anderson will be spending their summer at

the University of Nebraska at Lincoln. The REU program at Lincoln will give these students an opportunity to use their mathematical skills to model animal cannibalism. Both Tracy and Jonna will be junior mathematics majors in the fall. Tracy is also getting a major in Spanish and spent the spring semester studying in Nicaragua. Jonna plans on finishing a major in biology, as well as in mathematics, and hopes the REU will give her the chance to combine both of her inter-

ests.

Jean Clipperton will be studying graph theory at an REU at Valparaiso during June and July. Jean is a triple major in mathematics, philosophy and Spanish and also spent the spring semester in Nicaragua. Jean will continue her study of graph theory in the fall and spring as she completes the requirements for the honors program in mathematics.

Department Gives First Honors Degree

Three years ago, the Mathematics Department began to offer a new degree—honors in mathematics. We are pleased to announce that Shikha Basnet, who graduated in May, is the recipient of the first honors in mathematics degree.

The degree requires the student to have a major or minor which complements the mathematics degree, complete a year of research and defend a thesis, participate in a variety of extra-

curricular activities that support the major and have a minimum GPA.

Shikha has been working on her research for more than a year, and she presented her thesis, “Monopolistic Strategies in a Durable Goods Market”, in an hour-long talk in April. Her research combined elements from mathematics and economics, in which she was a double major. Shikha participated in the Modeling

Contest three times and was awarded two meritorious rankings and an honorable mention for her work. Shikha was given the award for Outstanding Senior in Mathematics and the Heckert Award for Outstanding Senior in Economics.

Shikha was accepted to 7 graduate programs in economics and will be attending the University of Pittsburgh in the fall.

Alum Juggles Mathematical Ideas

In 2002, Nate Iverson graduated from Simpson College with a mathematics degree. He then went to Bowling Green State University where he is working on a Ph.D. in mathematics.

Nate returned to Simpson College this spring to be a part of the Math Club speaker series. In addition to demonstrations of a variety of juggling patterns, Nate explained how to represent the patterns mathematically. He gave us a brief introduction to the use of group the-

ory and how it can be used to understand the patterns in juggling.

While at Simpson College, Nate participated in the Mathematical Contest in Modeling 4 years running, worked as a tutor and an intermediate algebra discussion leader for Hawley Academic Resource Center, and completed a research project in number theory.

The Math Club speaker series will continue in the fall.

**“It’s not that I’m so smart,
it’s that I stay with
problems longer”
—Albert Einstein**

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Mathematics is a more powerful instrument of knowledge than any other that has been bequeathed to us by human agency.—René Descartes

www.simpson.edu/math

SIMPSON COLLEGE

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.

Modeling Papers Win Awards

Nine students spent some quality time together on the first weekend of February as they competed in the Mathematical Contest in Modeling, and they found the time spent was well rewarded.

Maya Hristakeva, Shikha Basnet and Max Schlatter wrote a paper to solve the problem of efficient use of airport resources. They received a meritorious ranking (the second highest award) for their work, and were the only team in Iowa to earn this ranking this year. This is the second time that Maya and Shikha have earned a meritorious ranking for their work in the contest.

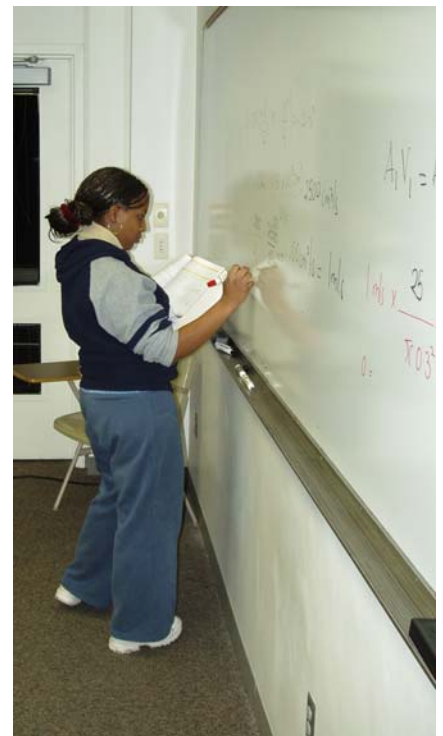
Two teams solved a problem on efficient irrigation systems. Tim Fairfield, Patrick Carlson and Joan Ritho received an honorable mention for their work. Dillon McKelvey, Prabal Thapa and Joe Edgington earned a ranking of success-

ful participant.

These students collectively have majors in Economics, Computer Science, Biology, Biochemistry, Philosophy and Mathematics.

This annual international competition sponsored by the Consortium for Mathematics and Its Applications gives teams of 3 students the opportunity to spend 96 hours working on a real world problem. Before the weekend is over, the students must solve the problem and submit a paper describing their model and solution.

The competition is an opportunity for students to develop skills such as working in a team, written communication of mathematics, time management and problem solving, all skills valued by prospective employers.



Joan Ritho uses her knowledge of physics and mathematics to model how water flows in irrigation systems.