



UMKC RooMath News

Department of Mathematics & Statistics Newsletter

<http://cas.umkc.edu/Mathematics>

Greetings from the Department Chair

Volume 7 Issue 1

2014



Welcome to the third edition of the Newsletter of the Department of Mathematics and Statistics and the University of Missouri—Kansas City!

I was on research leave for the calendar year 2013, and I am grateful to Dr. Eric Hall for graciously taking the responsibility of Interim Chair for the Department. During the last academic year, the department has undergone dramatic changes in its academic programs, faculty, and student body. This academic year, two new Assistant Professors, Xianping Li and David Spade, with specialties in Applied Mathematics and Statistics, respectively, and one new Assistant Teaching Professor, William Kalahurka, joined the department. Our current faculty size of 15 is small, but the department is dynamic due to

a dedicated faculty and a vibrant student body. For a complete list of our faculty and their profiles, please visit the department's website at <http://cas.umkc.edu/math>.

After three years' effort, the Missouri Department of Higher Education has approved our request to change our Master's degree titles from M.S. and M.A. in Mathematics and Statistics to two separate degree names: M.S. in Mathematics and M.S. in Statistics. This degree name change will help our Master's students find appropriate placement in the workforce. The department currently offers Bachelor of Arts (B.A.) and Bachelor of Science (B.S.) degrees in Mathematics, a Master of Science (M.S.) degree in Mathematics, an M.S. in Statistics, and an Interdisciplinary Ph.D. (iPh.D.) in Mathematics through the UMKC School of Graduate Studies, with the research direction being in either Mathematics or Statistics. In the calendar year 2013, there were 13 mathematics majors that graduated with a B.A. or a B.S. in Mathematics or Statistics, 11 Master's students who graduated with an M.A. or M.S. in Mathematics, and one student who graduated with an iPh.D. in Mathematics, with a Statistics emphasis.

The department's faculty members are active researchers in varying fields, including algebra, real analysis, logic,

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dynamical systems, mathematical biology, statistics, statistical phylogenetics and evolutionary biology, biostatistics, bioinformatics, genomics data modeling, spatiotemporal data modeling, numerical analysis, and mathematical finance. They actively collaborate with UMKC's School of Computing and Engineering, School of Biological Sciences, School of Medicine, School of Education, the Stowers Institute for Medical Research, and other research

Chair's Greeting (continued from Page 1)

institutions in the local community. I welcome you to navigate through the department website to learn of developments in our department. We are also eager to hear stories of our department's alumni, so please keep contacting us and please continue to spread the word of our dynamic programs to your friends and family. We sincerely hope that you continue to support our programs in any way that you can. Thank you!

Student News

Over the past academic year, the students in this department have participated in a wide array of activities, and they have enjoyed a great deal of success in these activities.

Undergraduates Recognized for Outstanding Research

The Department of Mathematics and Statistics would like to congratulate several undergraduates for their accomplishments in research during the previous academic year. Neiloy had his article entitled *Meta-Analysis of Polls from the 2012 Presidential Election* published in the 2013 edition of UMKC's undergraduate research journal LUCERNA.. Undergraduate Anna Riffe won a first place award in the History of Mathematics-Special Interest Group of the Mathematical Association of America (HOM-SIGMAA) undergraduate writing contest for her article *The Impossible Proof: An Analysis of Adrien-Marie Legendre's Attempts to Prove Euclid's Fifth Postulate*. In addition to the award from HOM-SIGMAA, Anna also had her article published in LUCERNA.

Undergraduate Jenna Miller also won a first place award at the HOM-SIGMAA competition for her article entitled *Casting Light on the Statistical Life of Florence Nightingale*. Jenna also won the Ilus W. Davis Writing Competition in the Advanced category. Paul Ayers won a second place award at the HOM-SIGMAA competition for his article *Gabriel Cramer: 260 Years of Crushing the Unknowns*. For their success in the HOM-SIGMAA competition, Anna, Jenna, and Paul received a selection of books from the Mathematical Association of America, as well as student memberships in the MAA. In the Fall of 2014, Anna will be returning to the department as a Graduate Teaching Associate. Paul graduated in Spring 2013, and Jenna is currently pursuing a degree in nursing at UMKC. Congratulations to Neiloy, Jenna, Anna, and Paul on their impressive accomplishments!

Undergraduate to Gain Valuable Research Experience

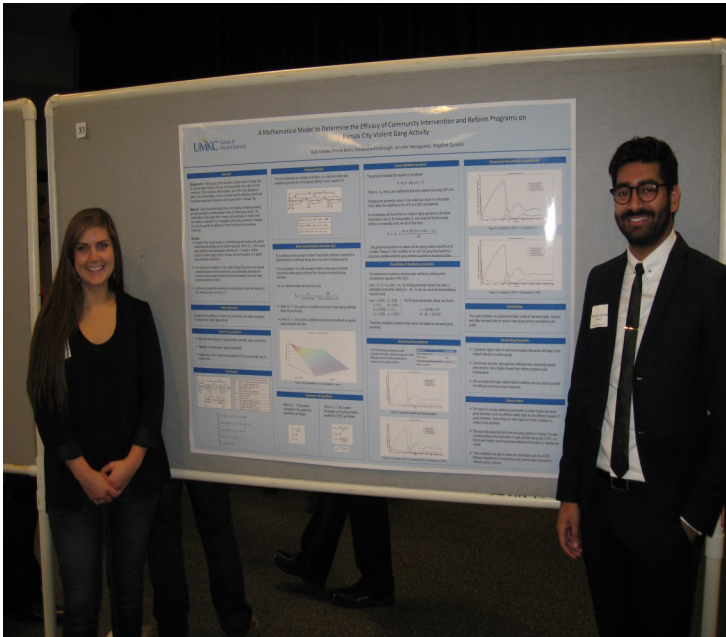
Rachel Crowell, an undergraduate student who will complete her B.S. in Mathematics and Statistics in December of 2014, will be participating in Worcester Polytechnic Institute's 2014 Research Experience for Undergraduates in Industrial Mathematics and Statistics. This competitive opportunity is funded by the National Science Foundation REU Site program and by

by the Center for Industrial Mathematics at WPI. The program is eight weeks long and will provide Rachel with a generous stipend and housing for the duration of her stay. Rachel will be working with a small team of other students, a faculty advisor, and a corporate sponsor on a research project in financial mathematics. The goal for their research will be to find solutions to a real-world problem in financial mathematics. They will strive to find solutions that can then be applied in an industrial setting by the corporate sponsor. Rachel is very excited to be a part of this opportunity to grow in her knowledge of financial mathematics.

Student News (Continued from Page 2)

Undergraduates Participate in SEARCH Symposium

Four undergraduate students enrolled in our Mathematical Modeling course submitted posters and presented them at the UMKC Students Engaged in Artistic and Academic Research (SEARCH) Symposium on April 18, 2014. Rachel Crowell presented a poster entitled *A Mathematical Model of Violent Gang Membership in Kansas City*. Nathan Gearhart also presented a poster titled *Competitive Lotka-Volterra Models to Investigate Long-Term Dynamics of Grassland Rodents in Northern Kansas*, and Emma Davis and Wajahet Qureshi jointly presented their project entitled *A Mathematical Model to Determine the Efficacy of Community Intervention and Reform Programs on Kansas City Violent*



Undergraduates Emma Davis (left) and Wajahet Qureshi (right) present their project on modeling gang violence in Kansas City at the SEARCH symposium.

Gang Activity. The department would like to thank these students for their dedication and hard work as representatives our department at SEARCH.

Undergraduates Represent UMKC in Saint Louis

Undergraduate students Laila Awadalla, Sophia Ndung, and Rachel Crowell comprised the first-ever team to represent UMKC at the Missouri Collegiate Mathematics Competition, sponsored by the Mathematical Association of America, at Washington University in Saint Louis in March. These students worked very hard to prepare for the competition, and they acquitted themselves well as ambassadors for our department and our university. Well done Laila, Sophia, and Rachel!



Undergraduates Rachel Crowell (left), Laila Awadalla (center), and Sophia Ndung (right) participate in the Missouri Collegiate Mathematics Competition in Saint Louis, Missouri.

Department Seminars

Seminars are held Friday afternoons from 3:00-4:00 pm in Haag Hall. You're invited to these department talks every semester. For dates and locations please contact Dr. David Spade at spaded@umkc.edu

Student News (Continued from page 3)

Graduate Student Earns Research Grant

The department would like to congratulate doctoral student Melissa Menning. Melissa was recently invited to the awards luncheon for the graduate school to accept a research grant award of \$6,000 from the UMKC School of Graduate Studies in support of her dissertation research. Melissa is advised by Dr. Liana Segal. Congratulations Melissa, and best wishes for continued success in research!

Congratulations, Drs. Wu and Hoffmeier!

The department would like to extend congratulations to Drs. Wei Wu and Justin Hoffmeier. In the Fall of



Dr. Wei Wu

2013, Wei successfully defended his dissertation entitled *Sequential Designs with Application in Software Engineering*. Wei's work was completed under the direction of Dr. Kamel Rekab. Following his graduation, Wei accepted a position with Sprint Corporation in Overland Park, Kansas.

In the Spring of 2014, Dr. Justin Hoffmeier successfully defended his dissertation entitled *Generalized Koszul Properties of Commutative Local Rings*. Justin was advised by Dr. Liana Segal, and he moves on from our department into a tenure-track position in the Department of Mathematics at Northwest Missouri State University. Congratulations Wei and Justin, and best of luck in your new careers!



Dr. Justin Hoffmeier

Graduate Students Win Honors for Research

Two graduate students from the department recently won awards for their submissions to the 2014 Community of Scholars Symposium organized by the Interdisciplinary Doctoral Student Council and the School of Graduate Studies. Carter Braxton gave an oral presentation on his project entitled *Forecasting the Unemployment Rate with Labor*

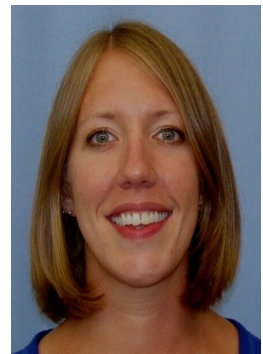
Market Flows. This presentation earned Carter a \$500 award as one of the top three papers from all submissions. Abishek Mallela also won a \$500 prize for his poster presentation entitled *Optimal Timing of Initiation of Antiretroviral Co-infected Individuals*. Abishek's poster was voted the best poster presentation in the Health Sciences category. Both projects were supervised by Dr. Naveen Vaidya. Congratulations Carter and Abishek!



Abishek Mallela

Graduate Student Wins Teaching Award

The department congratulates Kristin Everson (pictured below), who was recently awarded the Outstanding GTA Award from the UMKC School of Graduate Studies. Kristin continues a great tradition of GTAs from this department earning this award, as we have had several GTAs win this award over the last five years. Kristin graduated from the department with an M.S. in Mathematics in Spring 2014 under the supervision of Dr. Liana Segal. She moves on from UMKC to continue her teaching career at Center High School in Kansas City, MO. Congratulations Kristin, and good luck at Center!



Kristin Everson

Departmental News: June 2013—June 2014

Faculty Member Elected as an ASA Fellow

In the Spring semester of 2014, Dr. Jie Chen was elected as a fellow of the American Statistical Association (ASA). This honor is bestowed upon a handful of statisticians each year for their outstanding contributions to the field of statistics. This is a huge honor and a well-deserved



one for Dr. Chen, who has spent her career exploring different areas of bioinformatics. Her primary area of interest is in statistical change-point analysis, but she has done work in genomic data analysis and the distribution theory that characterizes gene expression data. She has had her research funded on several occasions by organizations including the University of Missouri Research Board (UMRB)

and the National Science Foundation (NSF). Dr. Chen has been a faculty member in this department since 1995, and the department congratulates her on this accomplishment. Well done, Dr. Chen!

Faculty Member Earns UMRB Grant

In the Fall semester of 2013, Dr. Naveen Vaidya was awarded a grant from the UMRB to fund his project entitled *Mathematical Models for HIV-1 Infection and Drug*



Dr. Naveen Vaidya

Use. Dr. Vaidya is the Principal Investigator on this project, which is funded from June 2014 to May 2015. Dr. Vaidya has research interests in various areas of the biological sciences, but he focuses primarily on Mathematical Biology, Differential Equations, and modeling the spread of infectious diseases. He has a wealth of research experience, much of which was gained through his two postdoctoral fellowships. The first of these was at the Los Alamos National Laboratory, in Los Alamos, New Mexico,

and the second of them was in the Department of Applied Mathematics at Western University, in London, Ontario. Congratulations Dr. Vaidya, and best wishes for continued success!

Help us go Green! Please join the Alumni e-mail list to receive newsletters by email! www.umkcalumni.com

Department Alumnus Wins UMKC Spotlight Award

Department Alumnus Mike Keefe was presented the UMKC Spotlight Award at a luncheon on April 24, 2014. This award is given annually to one alumnus, faculty member, student, or constituent leader whose accomplishments have caused national attention to be focused on the university and the Kansas City Metro. Mike has certainly accomplished this. Mike earned his M.S. in Mathematics from UMKC in 1974. Prior to his arrival at UMKC, Mike was a U.S. Marine, and during that time, he became very passionate about politics. He took up drawing political cartoons as a hobby, and he continued with this hobby during his time as a GTA in the department. Though his intention was to earn a Ph.D. in Mathematics, the prospects for work afterward looked grim due to a deep recession, so he began to look into jobs as a cartoonist. Mike went on to accept a position as an editorial cartoonist at the Denver Post in 1975, and after 36 years there, he was awarded the highest honor in journalism: the Pulitzer Prize. Mike retired from the Denver Post shortly after receiving the Pulitzer prize. Mike says on winning the Pulitzer Prize, "I guess I view winning the Pulitzer as validation



Mike Keefe: Alumnus of the Department of Mathematics and Statistics, and Pulitzer-Prize winning political cartoonist.

for my choice to leave mathematics and enter journalism, but the greatest satisfaction has come from spending a career doing something I love—something I would do for no pay." The department congratulates Mike on all of his success, and we wish him a very happy retirement!



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If you would like to donate to UMKC, please visit the **UMKC Foundation** web pages at <http://www.umkc.edu/umkc-foundation/>, where you will find links to Gift Planning, the Alumni Fund, creating a scholarship, and so on. **Our department is one of the few with no department scholarships for our undergraduate majors, and you might be the first to initiate one.**

Send Us Your News!

We're always happy to hear from you. Send a paragraph or two and let us know what you have been up to. Pictures are welcome. Please include your name, mailing address, and email address so we can contact you.

Send to: David Spade at
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IPhD Coordinator: Dr. Noah Rhee
Undergraduate Advisor: Dr. Majid Bani-Yaghoub (Juniors and Seniors), Dr. Eric Hall (Freshmen and Sophomores)
College Algebra Coordinator: Dr. Bill Kalahurka
Calculus Coordinator: Dr. Liana Sega
Seminar Organizer: Dr. Naveen Vaidya
Administrative Assistant: Tanya Henderson hendersontg@umkc.edu

Math Puzzler

You are given the opportunity to select one closed door of three, behind one of which there is a prize. The other two doors hide "goats" (or some other such "non-prize"), or nothing at all. Once you have made your selection, Monty Hall will open one of the remaining doors, revealing that it does not contain the prize². He then asks you if you would like to switch your selection to the other unopened door, or stay with your original choice. Does it matter if you switch?

Send solutions to spaded@umkc.edu.