RooMath News

Academic Year 2019-2020: Very Productive Despite All Challenges
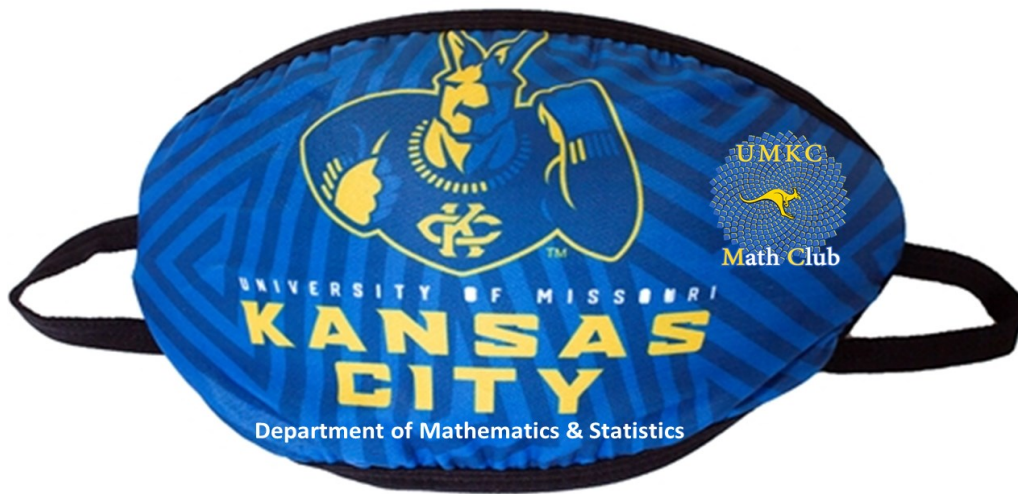
From the Chair, Dr. Majid Bani-Yaghoub

The academic year 2019-2020 has been a very productive year for the math & stat department. In this short note, I provide a summary of department activities and several positive changes despite the COVID-19 pandemic, budget cuts, and other challenges. During 2019-2020, 46 students graduated with a Math or Stat degree from UMKC. The degrees range from a minor in mathematics to a PhD in Math or Stat. The department has doubled the number of master's students since spring 2020. This semester, the department has a total of 84 graduate students (Master's, iPhD, and Co-iPhD), which is a 20% increase since fall 2019. In addition, the number of Math majors has increased by 15% since fall 2019. There is an overall 16.5 %

increase in enrollment since Fall 2019. The Math & Stat faculty is very pleased by increased enrollments and welcome all new students to the department. We treat students as our family and believe that each student has unique value and is worthy of our time, attention, and respect.

Last spring, we negotiated textbook prices with a publisher and were able to substantially reduce them. Starting this semester, we are saving more than $29,000 for 750 UMKC students who are taking math & stat courses. This is an average of $38.80 per student. The Math & Stat Department is also planning to replace the ALEX math placement test with a free version of a math placement test. This will save another $22.50 for each student. In addition, we have recently created two high-demand

career paths based on courses that are already offered at UMKC: Actuarial Career Path https://cas.umkc.edu/math/degree-programs/acp/ and Data Analytics Career Path https://cas.umkc.edu/math/degree-programs/dacp/

We are committed to increase the employability of our students.

The Math & Stat Department had a busy year of curriculum changes and career path establishments. Two new minor degree programs (Data Analytics and Statistics) were proposed and are currently being reviewed by the provost's office. Several new courses have been devel-

oped and will be offered in the following semesters. These include Introduction to Data Visualization (STAT 240), Diagnostic Analytics (STAT 245), and Predictive Analytics (STAT 260), and a new course Graph Theory with Applications (MATH 314). In addition, the new critical thinking course, CRT-SC 101: Tracking a Pandemic, has been developed and offered this semester.

The Math & Stat faculty collaborated with other departments and submitted three large grants (NIH R21 $880k, DOD $1.7mil, HIN Rapid $250k). Dr. Majid Bani is the Co-Pi of a recently funded NSF grant titled "Early Community Intervention for Neighborhood Revitalization Using Artificial Intelligence and Emerging Technologies." Dr. Richard Delaware is the winner of the UM System President's Award for Innovative Teaching. Stephanie Van Rhein won the CAS Outstanding Teaching Award. Administrative Assistant Tanya Henderson won the CAS Staff Member of the Year Award.

The Math & Stat Department hosted two major conferences. The first one took place on Friday and Saturday, Oct. 4th and 5th 2019, which was the 29th Kansas City Mathematics Teaching Technology EXPO (http://www.kcmathtechexpo.org/home.html). This was a huge success with participants from several regional universities and colleges. The invited speakers were Eli Luberoff, CEO of Desmos, and David Clark, winner of the MAA's 2018 Alder Award for teaching. The second conference was the Sixth Annual UMKC Math & Stat Research Day (April 17, 2020) with a focus on Modeling the COVID-19 Outbreak (https://cas.umkc.edu/math/msrd2020). Due to the COVID-19 outbreak, the conference was held through Zoom for the first time. There were 10 research talks from 5 different departments and many attendees.

Greetings from the President of the Math & Stat Graduate Student Organization

Hello Math Roos!

My name is **Bryan Harris.** I'm a graduate student in the math department, and the President of the Math & Stat Graduate Student Organization (MSGSO).

This year has been a very challenging one everywhere in the world including right here in the KC metro. Although we have been physically distant from each other here in the math de-

partment, we are still finding new and exciting ways to keep us together. This semester we are piloting **two reading groups** for UMKC students, one for graduate mathematics, and one for undergraduate mathematics. These groups are offered through Canvas and are intended to get students involved in learning mathematics not typically offered at UMKC. Any UMKC student can join either group at any time. For more info you can contact me at bryan.harris@mail.umkc.edu

With the sudden onset of COVID-19 around the world, there is also sudden demand for mathematical research in modeling its spread. Opportunities exist for both undergraduate and graduate students. If you are interested in participating in such a project, please contact Professor Bani at baniyaghoubm@umkc.edu

Bryan Harris
Graduate Teaching Assistant & Ph.D. student
President of the UMKC MSGSO

Summer Internship as a Data Analyst at YRC Freight

This summer, math major **Nina Han** obtained an internship as a data analyst at YRC Freight. Below is an interview with Nina about her responsibilities and how she got the internship. We highly encourage math and stat students to apply for internships.

1. You obtained an internship this year and worked full time during the summer. Could you tell us how you obtained the internship and how many other internships did you apply for?

I applied to 17 different companies, through Handshake and other job boards like LinkedIn and Glassdoor. I was offered internship opportunities from three companies which were all through Handshake. I decided to commit my summer at YRC Freight as a pricing analyst intern.

2. Did you have any help from UMKC career services and other resources to create and revise your resume?

UMKC career services were really helpful. I went to the Transfer Career Boot Camp in the beginning of the school year and learned how important it is to build a resume, attend career fairs and do summer internships. I met with Daniel Folks at career services to make a professional resume and to ask questions about upcoming phone interviews and on-sight inter-

Apply for a Jedel Scholarship from October 2020-April 2021
https://cas.umkc.edu/become-a-student/scholarships/current-student-scholarships/

views. Then I took my resume to **Dr. Delaware** to make it more fitted to quantitative positions I was applying for. He gave me a few ideas to modify, which made my resume more professional and eye-catching to HR.

3. What kind of questions can we expect in an internship interview?

Phone interviews were all very similar in that they wanted to see if the HR person should present this candidate to the team that the intern would be working with. Typical phone interview questions were:

- Tell me about yourself.

- Why do you want to work at our company?

- Why did you apply for this position?

- What do you know about our company?

- What classes are you taking and what do you enjoy about them?

Phone interviews are usually conversational, and it is a chance to show how personable and likable you are. On-site interviews were more intense with multiple team members bringing their list of questions.

A few questions I had from Evergy (predictive analytics) were:

- Why do you want to work at Evergy?

- Why should we hire you?

- What is your skill level of Excel, R, Python, SQL, or any other programming languages?

- What was the hardest problem you tried to solve?

- What would you do if your team member does not agree with you?

- What mathematics courses did you take and how would they apply to your work performance?

- When did you think that what data can do was so powerful?

- What are you reading?

I was lucky that I was reading "The Simpsons and their Mathematical Secrets" by Simon Singh at that time, not a romantic novel or a fashion magazine. I was able to pull out a few of the mathematical ideas embedded in the Simpson's episodes and share the math jokes from the book. The team of a data scientist, an electrical engineer, and an analytics team lead all liked the story and we laughed. Make sure you always read a book and possibly pick a topic or genre that the people you might work with would enjoy.

Questions from Mariner Wealth Advisors (operations analytics) included:

- Why do you want to work for our company?

- Share an experience when you worked as a team.

- When you are stressed, what do you do?

- Are you comfortable with Excel?

- What are your strengths and weaknesses?

For Mariner, I watched their CEO's recent video on the website and shared the positive impression I received from it. Also, I talked about how I have been managing my personal finances and how passionate I was about it.

Questions from YRC Freight were:

- Why did you apply for this position?

- What classes are you taking and how do you like them?

- How much do you know about the trucking industry?

- What do you want to gain from the summer internship?

The interview with YRC was more of them explaining to me about the company and what the pricing team does than me having to answer a series of questions. I told them why working with numbers was so fun for me and fortunately, the interviewer also loved math.

4) Name a few specific skills needed for a math or stat internship.

Excel, SQL, Python skills were most needed in my job and I actually asked my supervisor to put me in a team where I would have to solve real-world problems using those skills. I wanted to practice them and wanted to be good at using the programs and languages. I used Excel a lot, but the model I worked on

was written in SQL and Python. Being able to navigate and find data on SQL server, and running a Python file and making proper changes were necessary. Other than technical skills, what my managers found the most value in my work was my being able to come up with formulas for certain measures and to explain why it would be applicable in the project.

5) Tell us about the company that you worked for and its clients?

YRC worldwide is a logistics company that has 5 different branches. YRC Freight is specialized in LTL (less than a truck-load) business. Their big clients are Home Depot, Walmart, US Department of Defense, Amazon and more. But they have so many clients who do not need a whole truckload to ship.

6) What are the career expectations and characteristics of your internship?

The pricing department puts new grads in a position of a pricing analyst I. As they gain more knowledge and experience, higher positions will be given with more responsibilities.

Due to the pandemic, my internship was a hybrid of in-office days and work-from-home days. The company was flexible in the transition and had the necessary framework for remote working in place. My manager emphasized that being able to work remotely and showing that I am proficient in doing so is becoming more important. Meetings were done on Microsoft Teams and questions and working in collaboration was done through calls and chats on Teams and e-mails. It was different from traditional office settings but it was valuable experience that will be applicable working at any company. Setting up a good home office with dual monitors, nice headphones and microphones helped me to perform well working remotely.

7) Where and how did you use mathematics or statistics in your internship?

The project I was involved in was "spot rates in the dynamic pricing segment." The spot rate model was built to change rates based on the secure ratio of book to quotes, but the secure ratio has been disturbed by some parties requesting too many quotes without shipments, and the pandemic also reduced the amount of shipments. Since it drew the secure ratio down, the model adjusted the rates lower to earn more business, which was successful in earning more revenue but not necessarily leading to a good profit. They wanted to earn more profit and deal with less bill counts if possible, by setting appropriate rates. They had me think of ways to train the model to behave differently. The model was using a nested model of Poisson and normal distribution and also KNN (K-Nearest Neighbors) algorithm. Understanding how the model was built and the behavior it was showing through the lines of code in Python and SQL was important. I analyzed historical rate changes, up trends, down trends, and % differences to find out lanes that are showing desirable behavior. And then I found what metrics in the lanes made them result in rate changes that yielded lower operating ratios, thus more profit. Also, I noticed what makes the secure ratio less reliable and came up

with a way to modify the ratio by imposing different weights to different parties requesting quotes. In order to find a better measure to change the model behavior, I borrowed a concept of DuPont Analysis and wrote down points of interest we want the model to include on the rates. It looked like this:

$$\text{Book/Quotes}\times\text{Revenue/Book}\times\text{Cost/Revenue}\times(\text{Total Miles})/\text{Cost}\times(\text{Cost Miles})/(\text{Total Miles})\times\text{Profit}/(\text{Cost Miles})=\text{Profit}/\text{Quotes}$$

It captured secure ratio, operating ratio, lane balance and other metrics that we want the model to learn when finding lanes similar to each other. I was able to achieve this by thinking about several overlapping variables in different measures and making those variables cancel by adding and removing factors in the equation. My team lead was excited to learn about what I came up with. We implemented the new measure of profit per quote in the model and compared the model behavior before and after. I split the cases of 0 (no price adjustment), < 0 (negative adjustment), and > 0 (positive adjustment) in both before and after behaviors and found out that the model was actually raising the rates as desired. After that I analyzed what the final impact of this new behavior would be like after applying current business rules and reported how many lanes will be capped at the maximum adjustment, floored at the minimum, etc. Also in my presentation for evaluation, I reported what other metrics could be added and modified in the business rules to yield the best model behavior.

I think the course 'real analysis' (**Math 402**) helped me think like an analyst. Letting the problem guide me to what I should do next, creating new variables to make the work easier, setting how many cases are there for me to look into, knowing what's the domain and what's excluded from it (really helps in writing SQL queries) definitely came from real analysis techniques.

8) What math or stat skill would you like to learn to be better at your internship?

To jump up from being able to use and modify the model someone else built, I'd like to be able to build models using statistical methods. I wish we had a course with a lab where we actually implement our classroom learning into building models we can put in our own portfolio. It would be a very authentic learning experience and also a good story to share at interviews.

9) Tell us about your supervisors and their roles in training and preparing you for a future career.

My supervisor was a pricing manager who has been working at the company more than 30 years. She was in charge of pricing interns and made sure we learned about the company, industry acronyms and concepts, and how the pricing API and tools work. Since I asked her to put me in a team that does more quantitative work, she put me as an assistant to the dynamic pricing segment team lead. So rather than working on intern projects or data cleaning, I was able to actually think and problem-solve. She was the kind of boss who does not boss around and exists to support. I would definitely take her management style for my future career. My team lead was a tech savvy per-

son who showed me how he navigates the SQL server, writes queries, exports results, and analyzes the data to create information. I learned so much from seeing what he does, more than any tutorial on YouTube. Also, he patiently answered my questions and gave them a thought, which helped me develop the end results we were looking for.

10) Do you consider the same company and job as a future career?

Logistics was fun. It was like playing computer games. At the end of my internship I was offered the chance to extend my internship through the next semester, and I accepted it. I liked the people I worked with and the type of job I was doing day to day. They were flexible with my schedule and also accommodating to my requests.

11) What are the most satisfying and most frustrating parts of your job as an intern?

The most satisfying part was that I had a positive experience in solving real world problems and I am no longer afraid of complicated multivariate problems. The most frustrating part was due to the pandemic, there were not many personal interactions, lunch and learn, and networking opportunities.

12) In what ways, have you benefitted from having a summer internship?

1. Gaining corporate experience would definitely be beneficial for future job searching.

2. Learning the necessary skills in job performance from experienced people.

3. Being able to work from home efficiently, which will be a key qualification post-pandemic.

4. Earning credit hours toward graduation.

13) What advice would you give to other Math and Stat majors who will serve as an intern?

Let your manager know what you want to gain from the internship and ask them to give you a role that will fit you. Don't hesitate to ask questions and don't second-guess your questions because you can build your analytical strategy through getting those questions answered. Learn programming languages and be a proficient user of technology.

14) Tell us about your math and stat undergraduate degree.

It may sound strange, but I am glad I chose a degree that is not common. It really makes me stand out and the math and stat discipline is highly desired by employers.

15) Why did you choose mathematics and statistics?

This is the second bachelors' degree I am pursuing since I finally found my aptitude for mathematics. Growing up with math geniuses never gave me a chance to show off my mathematical strength. Though my test scores were remarkable, everyone around me had a high score. After learning cryptography, machine learning, and programming languages, I knew how much

I enjoyed logic and math. So, I proceeded to pursue a degree at UMKC.

16) Who or what inspired you to become a Stat graduate student?

I haven't decided to pursue a master's degree.

17) If you were not a Math and Stat major, you would be …?

A finance major. I like making assumptions, projecting future trends, and dealing with money.

18) Tell us about the Math and Stat professors at UMKC.

They are passionate in teaching and sharing their expertise. They care about students' successes. I think I will miss dropping by professors' offices to ask questions and connecting with them after I graduate.

19) Where do you see yourself in the next 5 years?

With a goal of becoming an actuary, I participated in the CAS (Casualty Actuarial Society) summer program to learn about the actuarial profession. During this time, I gained experiences in pricing an auto insurance, reserving for future claims, using predictive analysis tools and a case study competition. If everything goes as I planned, I will have FCAS or near FCAS in the next 5 years. I will have professional knowledge and skills to perform my job and will be influencing new actuaries who are starting off.

20) What do you enjoy doing in your spare time?

I like riding a bike, swimming, and dancing. I also like doing house projects like painting walls or hacking furniture.

Summer Internship in Physics studying Neutrinos

By Math and Physics major **Grace Reesman**

For ten weeks this summer, I participated in an internship "at" Fermi National Laboratory near Chicago, IL from my bedroom in Kansas City, MO. My research was a part of the Deep Underground Neutrino Experiment (DUNE) collaboration in the Neutrino Division. Neutrinos, rightfully nicknamed the "ghost particle", are notoriously difficult to detect as they almost never

Important Notes:
- There are several internship opportunities available in the Kansas City metropolitan area such as offered by Sprint, Cerner, Lockton, & H&R Block. There are also internships listed by the **American Mathematical Society**
- Deadlines for summer programs usually occur during the previous Fall or Winter. There are also many applications due January- March of each year.
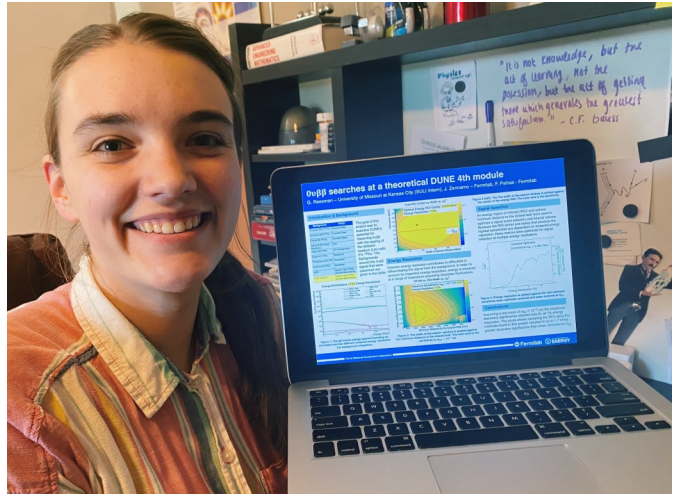
interact with ordinary matter. In fact, every second, about 100 *trillion* neutrinos pass through your body, yet there is only a 1 in 4 chance that you will interact with one throughout *your entire life*; even if you did interact with a neutrino in your lifetime, you wouldn't notice. DUNE will be the most sensitive next-generation experiment in the US to neutrinos. You can learn more about DUNE at https://www.dunescience.org.

The goal of my research was to optimize a neutrino-less double beta decay signal event selection in an enhanced DUNE detector module. The enhancement would include the doping of the detector medium with a double beta decay candidate, such as ^{136}Xe. In the most common form of beta decay, a neutron emits an electron and an antineutrino, and in doing so becomes a proton. When two beta decays occur simultaneously in the same nucleus, it is called a double beta decay. In this case, two electrons and two antineutrinos are emitted from the nucleus. If neutrinos are their own antiparticle, neutrino-less double beta decay is a double beta decay in which the two emitted neutrinos annihilate, leaving behind only the altered nucleus and the two electrons resulting from the double beta decay.

The observation of neutrino-less double beta decay would display a violation of the conservation of the number of a type of particles called leptons. Leptons include electrons and neutrinos; protons and neutrons are a different class of particle known as baryons. Since prior to neutrino-less double beta decay, there are an equal number of leptons and antileptons, and afterwards there are two additional leptons (the electrons), lepton number is *not* conserved in a neutrino-less double beta decay. This differs from a regular double beta decay because the resulting emission is two electrons (two leptons) and two antineutrinos (two antileptons), satisfying lepton number conservation since antileptons are considered to have negative lepton numbers. Therefore the observation of neutrino-less double beta decay could provide answers to questions such as why we measure more leptons than antileptons in our universe, and since lepton number and baryon number are intertwined, why we measure more matter than antimatter in our universe. You can learn more about neutrino-less double beta decay at https://www.anl.gov/hep/neutrinoless-double-beta-decay, and more about matter-antimatter asymmetry at https://home.cern/science/physics/matter-antimatter-asymmetry-problem.

I spent most of my days working from my laptop, from which I had access to Fermilab computers through a VPN and an SSH server. My research used simulations, therefore my daily work included coding (in C++, ROOT, and occasionally Python), reading articles, and analyzing simulation outputs. Going into this summer, I didn't know C++ or ROOT, and hadn't taken a statistics class since high school, therefore I spent a lot of time teaching myself enough of each to be able to do what I needed. I also had help from two research mentors, with whom I met once or twice per week via Zoom. In these meetings, we discussed progress, problems, and goals. I found

these meetings extremely beneficial, as I often found myself figuring out something I had been stuck on as I was explaining it. Once I realized this, I became better able to investigate and answer my own questions. We also had lectures twice per week from scientists at Fermilab and university professors covering topics from AI/machine learning to cosmology to medical physics. I definitely found some topics more interesting than others, but I still appreciated the chance to learn more about work out-

side of my field.

At the end of the summer, we were required to give a poster presentation and write a paper. While writing, I looked back at my research notes from the beginning of the summer and realized how much I had learned. Not only did I learn more physics, coding, and mathematics/statistics, I also learned how to think and solve problems like a researcher. I also took a genuine interest in my project, and enjoyed the research I did, which had the added benefit of confirming my career choice. The knowledge and skills that I obtained throughout this summer are difficult to acquire in a classroom setting, though I did enjoy the chance to apply what I have learned in both my physics and mathematics courses (**group theory** in particular plays a major role in particle physics). Therefore, as an aspiring scientist, I found this experience valuable and worthwhile. You can find information about applying for a similar internship or REU at https://science.osti.gov/wdts/suli or https://www.nsf.gov/crssprgm/reu/.

Congratulations to Recent Math and Stat Graduates

The Department of Mathematics and Statistics congratulates the following recent graduates with a degree in mathematics or statistics.

PhD in Mathematics or Statistics
Colin Barker, Math FS19
Nasir Zarzour, Stat FS19
Xia   Xing, Stat FS19

Bader S. Alanazi, Stat SS 20
Yawo   Ekpoh, Stat SS20

MS Mathematics
Pleasance (Hope) Mertz   SP 20
Deepak   Sireeshan SP 20
Kodi Kuhlman SP 20
Sara Cole FS 19

MS Statistics
Haley   Kottman SP 20
Krishna   Doddala SS 19
James   Rippee SS 19

BS/BA Mathematics & Statistics
James   Flack II FS19
J Robert Crowley FS19
Collin   Fager FS19
Amylia   O'Neill FS19
Jacob   Reynolds FS19
Manse   Soura FS19
Alyssa   Studer FS19
Myo Thai FS19
Chen Chen SP 20
Keith Slaughter SP 20
Kathryn   Menta SP 20
Nathan   Underwood SP 20
Danielle   Grant SP 20
Maya   Lucas-Clark SP 20
Samir   Taheri SP 20

Math Minors
Fall 2019
Tetyana   Anisimova
Cody   Halverson
Tarik   Salay
Scott   Thompson
David   Tran

Spring 2020
Amro   Ali
Irem Atik
Abdulmajeed Baba Ahmed
Justin   Balino
Lauren   Higgins
Duong   Hoang
William   Hoang
Duyen   Huynh
Samuel   Lim
Kory Overbay
Brook   Ratliff
Alec Shern
Gregory   Troiani
Darius   Williams
Mao Zheng

Risky Business – Actuarial Science

By **Nicole Stovall** MS Stat Student nbsp6b@mail.umkc.edu

Applications. Actuarial science is a discipline that applies statistical, economic, and financial methods to assess risk. The primary areas where actuarial science is used are life insurance and annuities, healthcare, and property casualty lines of insurance. In the insurance industry, policyholders pay a premium to insurance companies, and in return the insurance company will make a payment if and when a covered event occurs (for example, upon death for life insurance or in the event of a car accident for car insurance). There are many uncertain factors such as whether an event will occur, when the event will occur, and the amount of money that will be paid out by the insurance company. Thus, actuaries working for an insurance company will need to apply statistical models to assign probabilities to these uncertain events and forecast out the financial impact on the insurance company.

Actuaries analyze company data and use various statistical techniques to help determine these unknown probabilities. For example, an actuary may investigate if there are certain risk factors that increase the chance of an event occurring (i.e. age, marital status, and gender for car insurance). They may use mortality tables (for life insurance policies) or fit the data to a loss distribution to help forecast frequency and/or severity of future claims. This will allow the insurance company to charge enough in premium to cover these losses and reserve an adequate amount to cover future company expenses.

The information gathered through research, data collection, and analysis can also be used to analyze potential new products and policies and to compare the expected payout under various policies. For example, an actuary may be interested in determining the expected increase in payout for a policy with a $2,500 deductible compared to a $3,000 deductible, or the market impact of offering a new product. With actuarial science, companies can make sound decisions and ensure that they are financially stable in the future.

History.   Actuarial science can be dated back to the 17th century. At that time, all the key components were present: various forms of insurance existed, time value of money and probability concepts had been explored, and there was an ability to access and analyze statistical data regarding death. Around that time, mathematician Edmond Halley published a paper that would be important to the development of actuarial science. In his paper, Halley created a life table and demonstrated how it could be used, applying statistical methods that are comparable to the methods used by present day actuaries.

The first company based on actuarial science and the first company to use the term "actuary", the Equitable, was established in 1762. At that time, the work of an actuary had to be completed without the aid of modern technology. Rather than using computers to carry out these calculations, actuaries had to do the computations by hand. Thus, actuaries at the time needed to use shortcuts and techniques to be able to complete their work manually.

Advancements. Two notable advancements in actuarial science have been the combining of stochastic processes with financial economics, and advancements in technology. Important contributions to stochastic (random) processes and probability theory were made around the 1930's. Around that time, actuaries began using these concepts in their forecasts. Prior to the 1980's, actuarial science and financial economics were separated. However, around this time, actuaries started to combine these stochastic methods with financial theory, which led to more refined forecasts and models.

Clearly, the invention of computers has also had an impact on actuarial science. Calculations that once had to be completed using pencil and paper can now be completed quickly using software such as SAS, R, and packages included in Excel. Improvements in computer processing speed allow for more scenario and stress testing; these processes that once took hours now can be completed in just minutes. Increased computing power has also led to new and enhanced statistical data mining techniques that are now more commonly used by actuaries. As the world of machine learning advances, actuarial science will continue to be a vital field of statistics for insurance and financial companies looking to control their risk.

Sources

Actuarial Science. Wikipedia.org. Wikipedia, 2019. Web. 1/4/2020. <https://en.wikipedia.org/wiki/Actuarial_science>.

King, Martina. Software-The Rise of the Machine & the impact for actuarial modelling. Actuarial Post.co.uk. Actuarial Post, 2020. Web. 1/4/2020. <http://www.actuarialpost.co.uk/article/the-rise-of-the-machine----the-impact-for-actuarial-modelling-8587.htm>.

Lewin, Chris. The Creation of Actuarial Science. Subs.emis.de. ZDM, 2001. Web. 1/4/2020. <http://subs.emis.de/journals/ZDM/
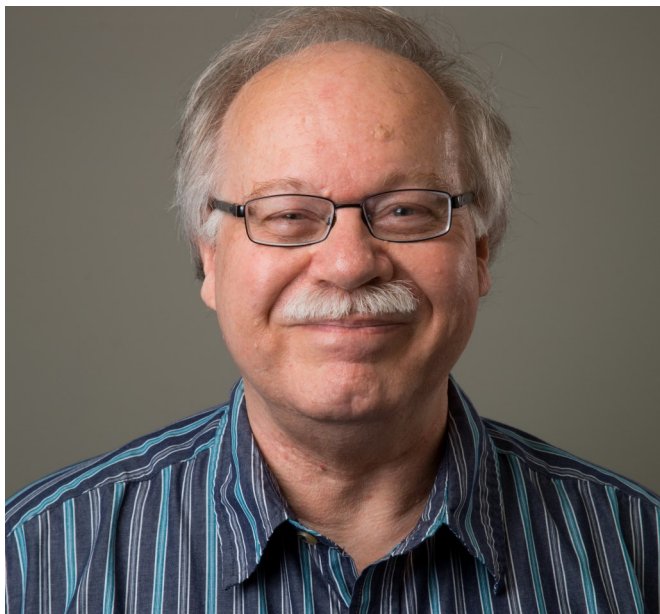
Professor Richard Delaware Receives UM System President's Award

Teaching Professor **Richard Delaware** has been selected as this year's recipient of the **President's Award for Innovative Teaching**! The UM System President's Award is highly competitive and prestigious. Each year, only one faculty member in the entire four school UM system receives this award. As noted by the president of the UM System "While there are always many deserving nominees in such a competition, it is clear to me that the committee has made a superb selection."

The Innovative Teaching Award recognizes faculty who are out-

standing teachers and employ novel and innovative teaching methods to achieve success in student learning.

Professor Delaware describes one of his active learning innovations in Math 301: "I now schedule what I call Board Days at least three times during the semester. Class periods are 75 minutes long. I arrive early and draw vertical lines on the boards, dividing board space into small panels. At the top of each panel, I write a mathematical statement or two to prove. I find these in our textbook's homework problems, or those of a collection of other similar texts. When class begins, I instruct my students to work in self-selected pairs at whichever panel they choose. (Of course, I adjust when I have an odd number of students, or for other reasons.) Then for 50-60 minutes they work, while I circulate, monitoring their progress, prodding, providing guidance, answering questions, and so on. After that time period, we stop, and one of each pair explains their proof or progress toward a proof to the entire class. Just before class ends, I ask a student to take a snapshot of each of the panels and email them to me to post for the class on Canvas, the learning management system UMKC uses."

In addition to his innovative active learning strategies, Professor Delaware's Math 464 WI students have produced 28 expository mathematics publications (25 local, 3 national), in the UMKC Sosland Journal, UMKC Lucerna, the Rose-Hulman Institute of Technology Undergraduate Mathematics Journal, and the Mathematical Association of America (MAA) Convergence online journal. In his own words: "We must encourage our students to reason actively, not blindly master mathematical tools, and to trust to their own innate originality. Mathematics is a quintessentially human endeavor."

Please join the entire UMKC community in congratulating Professor Delaware (DelawareR@umkc.edu) on receiving the UM System President's Award – a monumental achievement!

Stephanie Van Rhein Receives Outstanding Teaching Award

Stephanie Van Rhein (VanRheinS@umkc.edu) has been selected as a recipient of the **College of Arts and Sciences Outstanding Teaching Award**. The award is well-deserved.

From one of her recommendation letters: "We hired her in 2011, nine years ago. Soon after she arrived, we thought we might lose her since her husband got a job in Springfield,

MO. With our support, she boldly pursued the idea of being our online courses specialist and so become our first full-time faculty member located at a distance from UMKC (about 166 miles). Luckily, she worked it out with the CAS and she's held this position for our department admirably since then. We owe the success of our online program to her and her constant search for improvement. She's mastered teaching effective, high impact mathematics courses online and her student evaluations reflect that achievement. She also assured that our department maintained academic integrity in those courses, while encouraging us to become more flexible in our offerings. Especially, in this last semester of 2020, when were suddenly thrust into the online world, she's shared her knowledge and experience with all of us."   The following part is selected from Stephanie's teaching philosophy:

"*Teaching will always go beyond just delivering content; it is about supporting students' needs and giving them every opportunity to learn. As an educator, I strive to create an environment that fits the students' needs. I believe that an effective educator develops an atmosphere that values education, creates a positive energy for the material, and has the ability to connect to the students in a way that inspires them to want to learn. Showing the students that having a better understanding of the world around them is not only going to benefit them, in their individual lives, but will also benefit their generation as a whole.*

I feel that one of the most important strengths that an educator can have is the ability to communicate effectively, beyond the ability to communicate the material and the policies for the course. I strive to create an environment that encourages an open dialogue with my students. Connecting with students is very important to me. I want every student to feel comfortable communicating with me in whatever setting is needed. Teaching face-to-face or online, asynchronous or synchronized, I want my students to be comfortable communicating with me. I strive to use a wide variety of different forms of communication to connect with my students, especially those that have questions or need extra help outside of the classroom. It is very important to me that my students know that I want them to succeed, keeping up with students who are falling behind and letting them know that I am here to support their needs and help them create a pathway to success.

There has never been a one-size-fits-all approach to education. I believe part of my job as an educator is to keep up with the changing needs of my students. Self-reflection and flexibility has been crucial to me in the process to continue to improve and adapt my teaching to best address the needs of my students and society. Teaching the majority of the content in an online environment, technology has played a large role in my ability to be an effective online facilitator. I strive to always stay on top of research-based best practices as well as the advancements in virtual teaching technologies, and adapt the proven techniques and technologies to create a robust high quality course."

Tanya Henderson Receives Staff Award

Our Administrative Assistant **Tanya Henderson** has won the **College of Arts & Sciences Staff Member of the Year Award**. Tanya has been a member of this department for more than 20 years. She patiently spends time with each GTA and Adjunct Faculty to complete the hiring and payrolls for each semester. For a department serving thousands of students each year, the volume of work that Tanya is doing is extraordinary. In addition, faculty and students know that Tanya is extremely resourceful, responsible and reasonable. Despite the over-

whelming amount of work that everyone must do, Tanya consistently finds ways to help her co-workers and the training staff of departments such as English. She also provides help and expertise to staff members of other neighboring departments such as Sociology, Economics, and Latinx. Her willingness to assist others and her commitment to educating A&S employees is unequaled. In addition, she quickly responds to endless requests from math & stat faculty & GTAs.

UMKC Math and Stat Fast Track programs

The mathematics and statistics fast track programs offer students an opportunity to meet the full requirements of the BS and MS in Mathematics and Statistics in a shorter time period than the separate degree programs. https://cas.umkc.edu/math/degree-programs/fast-track-programs/
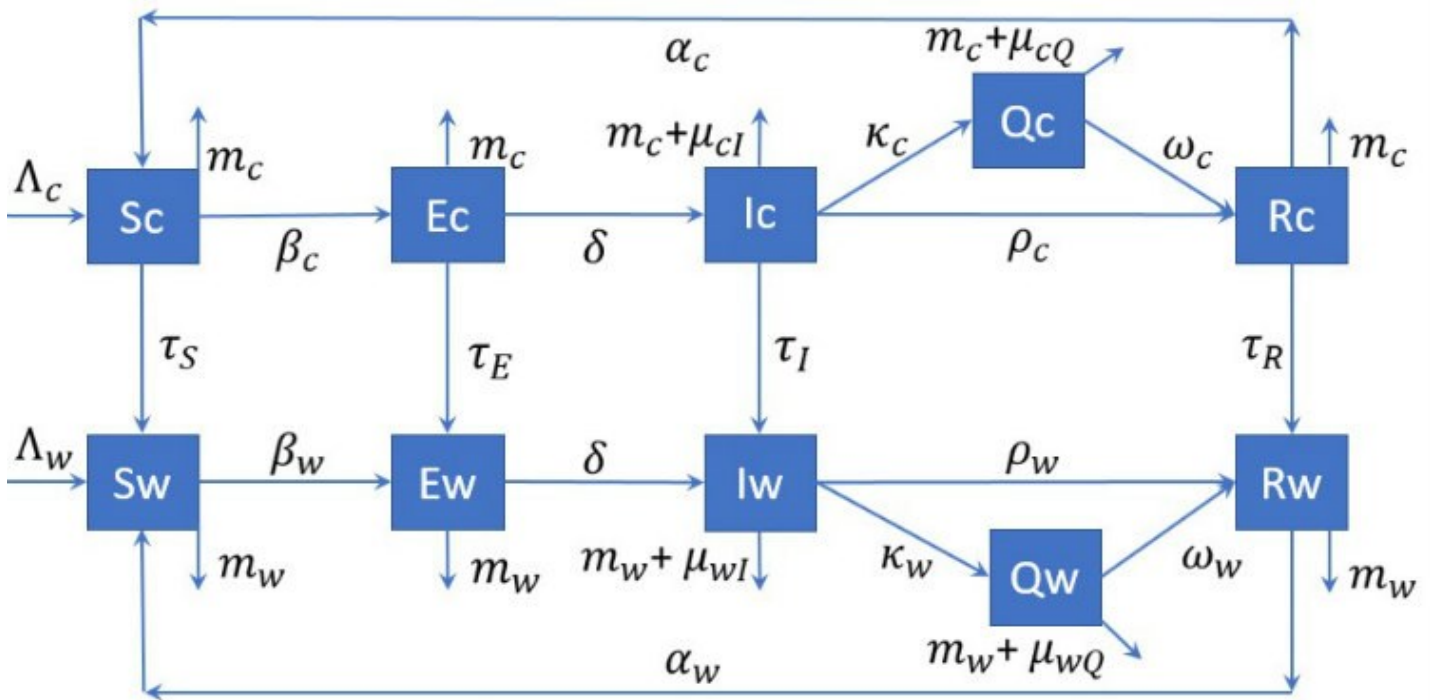
COVID-19 Research by the Numbers

Math and statistics students began studying the potential spread in January. Before many people were aware of the COVID-19 virus and its potential for broad infection, UMKC students were building predictive models of its possible spread.

Majid Bani-Yaghoub, Ph.D. (known as Dr. Bani), associate professor and chair of the Department of Mathematics and Statistics, focuses on mathematical modeling in several areas of study including health and biomedicine. He had been following the scientific reports of the new virus in China and incorporated it into his Graduate Differential Equations class.

"I was following the news in January, and I knew modeling and analysis of the virus would be a good fit with this course," he says. "Our work is continuing. We have three different groups using epidemiology, math and statistical models and numerical simulations to see how the virus is affected by policy." In addition to following the progress of COVID-19, they are using optimal control theory, to predict the best way to minimize spread." Analyzing which combination of control measures gives us the best result and provides a good understanding of how to stop the spread of the virus," Bani says.

Hope Mertz, MS '20, Mathematics, studied the spread of COVID-19 for her research project. She was not that familiar with the virus when she enrolled.

"I had just started hearing about what was happening in China, so when Dr. Bani started talking about the project, my partner [**Kodi Kuhlmann**] and I jumped at the chance to work on something so pertinent."

At the time, it appeared that the virus was only spreading in a small part of China. Bani shared the website for research articles at John Hopkins University and Mertz began to think that virus was spreading further and faster than reported.

"We modeled the spread from Wuhan City to New York City via their main travel hubs," Mertz says. "We could see that the reported number of cases was a huge understatement. I could not force my model to give me numbers as small as what was being reported." Besides the student projects, research on COVID-19 has yielded successful collaborations with other faculty members. Using existing resources through the UMKC Institute for Data Education, Analytics and Science, Bani has recently started research on drug repurposing with Bi-Botti Celestin Youan at the School of Pharmacy and Dr. Liana Sega, also in the Mathematics and Statistics Department in the College of Arts and Sciences. "There are millions of untested drugs," he says. "We can use predictive modeling, machine learning techniques and some abstract areas of mathematics such as persistent homology to explore how we could use an existing drug as a solution for the problem."

While he is certain of the quality of his team's work, Bani cannot predict the likelihood of another surge.

"Math models are as accurate as the data," he says. "From what we see so far, we hope that there's a down trend, but we are not 100% sure about the data."

Bani says we will know more once more businesses are open and more people are out.

"The spread could be really rapid, and we should follow the CDC guidelines to prevent the second wave," he says. "We are relying on each individual. This is proven epidemiology – each person can make a difference."

More Faculty News

Dr. Eric Hall was on a research leave during the academic year 2019 –2020. He has been helping the math & stat department in so many different ways during his leave. A few examples include but are not limited to:

- helping the new chair with scheduling, understanding the budget and several other items;

- advising undergraduate students and determining course equivalencies;

- attending some committee meetings;

- working with the provost's office, math coordinators and DANA center on the quality of math pathways courses;

- participating in faculty hiring activities and providing feedback, and maintaining a good balance between the faculty members to help the department move forward.

Dr. Yong Zeng is currently serving the National Science Foundation as a Program Director. His service at NSF as a rotator from the University of Missouri - Kansas City will increase the visibility of UMKC (including our department) and the UM System. He is committed to contribute to the department and UMKC during his leave. Some of his FY 20 – 21 contributions are:

- Ph.D students: currently, he advises one Ph.D student,

Jamila Kridan, on statistical inference for a partially-observed jump-diffusion process. He is willing to supervise more PhD students.
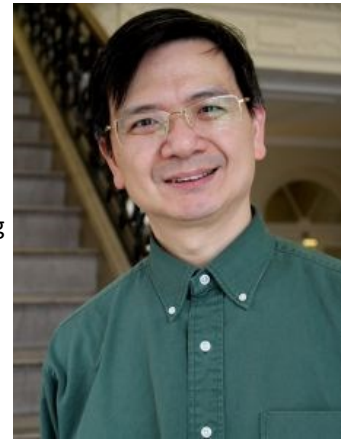
- Supports new and ongoing research in our department providing information on new or existing NSF programs, either monthly or whenever needed.

- Increases the number of MS students and undergrad students by advocating for our graduate programs whenever there is an opportunity.

- Makes efforts to strengthen the research connections between our department and other UMKC units. Recently he began some research on non-linear optimization on machine learning with Zhu Li, a faculty member of CSEE, and Hongwei Mei, a postdoc at KU.

Dr. Sam Ye joined our department in Fall 2020. Prior to that he was a statistician at the UMKC School of Nursing. Dr. Ye has expertise in sequential promotion and detection of latent attribute change in Cognitive Diagnosis Models. Such models primarily aim to identify binary elements of multiple fine-grained attributes at subject-level.
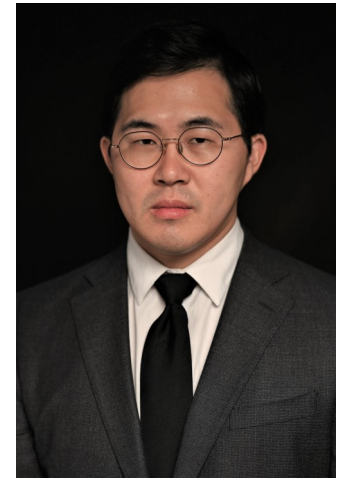
Since his arrival in the UMKC Math & Stat department he has been extremely successful. He is teaching three statistics courses this semester and has agreed to supervise three PhD students. In addition, he will play a crucial role in the new degree program "Bachelor of Applied Science in Data Analytics". His presence is needed for campus-wide and departmental initiatives. He will also teach several applied stat courses for undergraduate students. These include:

- STAT 240 Introduction to Data Visualization

- STAT 245 Introduction to Diagnostic Analytics

- STAT 260 Introduction to Predictive Analytics

- STAT 400 Machine Learning and Statistical Modeling

- STAT 482 Statistical Models for Life Contingencies

- STAT 5551 Applied Statistical Analysis

- STAT 5561 Time Series Analysis

Dr. Kamel Rekab had a busy year of teaching, training PhD students and research. During the academic year of 2019 –2020, four of his PhD students graduated in the areas of sequential analysis, software reliability, logistic regression and cluster/ discriminant analysis, and factorial analysis. His PhD students Nasir Zarzour and Xia Xing graduated in Fall 2019. The other two PhD students Yawo Ekpoh and Bader S. Alanazi both successfully defended their dissertations on Friday July 10th, 2020. Huge congratulations to Dr. Rekab and his recent PhD graduates!

  The dissertation titles are listed below.
- Yawo Ekpoh (2020) Applications of multivariate analysis to understand the dynamics of African conflicts
- Xing Xia (2019) Efficient sequential designs with asymptotic second-order lower bound of Bayes risk for estimating product of means
- Bader Alanazi (2020) Sequential Sampling Designs for Estimating Software Reliability
- Nasir Zarzour (2019) Sequential test allocation for estimating software reliability with associated cost

Dr. Rekab's 2019-2020 publications include:
Second order optimality of fully sequential designs for estimating the product of means with application in reliability estimation, with X. Xia Song, *Biometrics & Biostatistics International Journal,* **8**(3), (2019)

Second-order efficiency for estimating the reliability of k components series System, with X. Xia, International Journal of Emerging Technology and Advanced Engineering, (2019)

Pediatric multicenter cohort comparison of percutaneous endoscopic and non-endoscopic Gastronomy technique outcome, Journal investigative medicine with A. S. Kumar, M. Bani-Yaghoub, Matt Hall, T. M. Attard, 10 (2019)

Second-Order Efficiency for Estimating the Product of k Means, with X. Xia, International Journal of Emerging Technology and Advanced Engineering, (2019)

Fully Sequential Sampling Design for Estimating Software Reliability, International Journal of Emerging Technology and Advanced Engineering, (2020).

Dr. Noah Rhee is a senior applied mathematician with expertise in numerical linear algebra and matrix theory. His research interests include the study of chaotic systems, approximations of the stationary densities of Frobenius-Perron operators, and the maximum entropy method and its applications. Dr. Rhee, his students and colleagues published several research articles during the academic year 2019-2020.

Dr. Liana Sega has a research focus on Commutative Algebra and Homological Algebra. She studies infinite free resolutions of modules over local or graded commutative rings, and associated structures and invariants. She has been very successful in training graduate students, publishing highly cited articles and teaching a variety of graduate and undergraduate courses.

In October 2019, Liana Sega attended a week-long workshop at the Banff International Research Station in Canada. The main purpose of the workshop was to foster collaborations between women in Mathematics. She is now part of an active research group of 7 women from different parts of the world, working on projects in combinatorial commutative algebra … through regular Zoom meetings.

In March 2020, she was elected vice-chair of the Missouri section of the Mathematical Association of America (http:// sections.maa.org/missouri/), and her main role will be to organize the annual meeting of the section, which will be held at UMKC in spring 2022. In addition, she recently became an editor of the Journal of Commutative Algebra (https:// rmmc.asu.edu/jca/jca.html).

In addition, Dr. Sega has been supporting departmental initiatives in so many ways. Her endless efforts have made this department very effective and efficient.

Dr. Majid Bani is an applied mathematician with expertise in differential equations and non-linear wave theory. "We develop new mathematical methods, algorithms and models to maximize extraction of information from real-world data, provide accurate model predictions in health and medicine, quantify effectiveness of control and prevention policies, and to push forward data science using advanced mathematics," Dr. Bani says. This year Dr. Bani and his colleagues were awarded the following research grants:

Co-Principal Investigator, Virtual Screening of Drug Database for Effective Neuroblastoma Drug Repurposing (2020-2021) Collaborative Data Science Grant, $25,000

Co-Principal Investigator, SCC-PG: Early Community Intervention for Neighborhood Revitalization Using Artificial Intelligence and Emerging Technologies, (2020-2021) NSF, IIS - S&CC: Smart & Connected Communities, $150,000

The Math & Stat Department saves Students thousands of dollars

The following table shows the old and new textbook prices and the amount of saving starting this semester.

Course	Old price	FS 20 price	Saving
Math 110	$88.25	$65.00	$4,208.25
Math 116	$88.25	$65.00	$2,813.25
Math 120	$88.50	$65.00	$1,245.00
Math 210	$94.15	$94.15	$0
Math 220	$94.15	0	$14,687.40
Math 250	$94.15	0	$3,945.30
Math 300	$91.50	$65.00	$1,590.00
Math 345	$91.50	$65.00	$609.50
Total			$29,098

Kris Kathman is recognized by the Arts & Sciences Dean's office for her excellence in teaching; Students noted her as an A+ instructor!

In Fall 2019, the Dean's office noted the excellent work of **Kris Kathman** in teaching mathematics. Below is a part selected from her teaching philosophy:

" 'I am not good at math.' This is a statement I have heard time and time again, and have myself spoken to my own teachers. People wear it like a badge of honor or a protective shield. It's a statement that protects students from struggling with and overcoming math. My goal in teaching is to eradicate this statement. I plan to rid the world of this by first helping students to develop a better mathematical foundation, by scaffolding lessons to increase ability, and lastly by boosting my students' confidence in math by showing them that with hard work and practice they *can* do math."

Who do you admire most at UMKC and why? I admire my pre-calculus professor, Kristin Kathman

I admire my pre-calculus professor, **Kristin Kathman**. She always sees the potential in her students and encourages the best work from each one. She loves joking around, which makes the class extremely enjoyable. My professor genuinely cares about the work that she is doing and it's obvious. She refuses to let any one of her students struggle or fail her class. She knows what we are capable of and does what she can to help each of us individually. She has set a high standard for future professors, and it has allowed many of her students to create that academic relationship with her. She is definitely a professor that I will always admire and someone that I know I can always go to for anything.
Jennifer Rangel, '22

Hometown: Kansas City
High School: Shawnee Mission East High School
UMKC degree program: Undecided, University College
https://www.umkc.edu/news/posts/2019/april/Undecided-Major-With-a-Future-Full-of-Possibilities.html

Congratulations to the 2020-2021 Recipients of Jedel Scholarships

The **Jedel Scholarship** amount is $2,000 per semester. The Application Deadline is October-March (Click here to apply).

Qualifications: Students majoring in Math. Preference given to students with a combination of financial need and historical good academic performance at UMKC. The fund will award three $4,000 scholarships per Academic Year.

The recipients of the 2020-2021 Jedel Scholarship are **April Wickham** and **Nina Han**. Congratulations to both of them!

APPLY FOR SCHOLARSHIPS

Top 10 Reasons to Earn Your Math or Stat Degree at UMKC

1. Small class sizes (often below 15 students for upper-level courses)
2. Flexible class schedules (multiple sections for entry-level courses)
3. Generous scholarships (Jedel, Arts & Sciences, UMKC , & more)
4. Variety of internships in KC area (Lockton, Cerner, H&R Block, etc.)
5. Excellent faculty-student interactions (student projects & presentations)
6. Great Math Club activities (Pi Day, Integration Bee, Math Matinee, etc.)
7. High graduation and employment rates (94% & 88% with six-month follow-up*)
8. Math & Stat fast-track programs (Earn your bachelor's & master's degrees in five years)
9. Actuarial Career Path (prepares you to become an actuarial analyst)
10. Data Analytics Career Path (prepares you to become a data analyst)

* the rates are the average values for those with a graduate or under-graduate degree (https://data.umkc.edu/student-outcome-data/). The graduation rate is based on the average number of returning math and stat students.

More Recent Student News

Amanda Nethington, B.S. Mathematics 2019, wrote an exposi-tory paper for Math 464 WI, titled "**Achieving Philosophical Perfection: Omar Khayyam's Successful Replacement of Euclid's Parallel Postulate**", published in *Lucerna* in early 2020. Her paper was supervised by **Dr. Richard Delaware**.

Graduate student **Mathew McCoy** won the School of Graduate Studies **Superior Teaching Award** for GTAs in spring 2020. He says about his **GTA Coordinator Kris Kathman**: "*Kris is the best coordinator I have ever worked with! She is extremely dedicated to her students and to the success of the GTAs here at UMKC. I feel very fortunate to have worked with her during my time as a graduate student.*"

Graduate **Shelby Bell-Glenn**, now a graduate student at KU Medical Center in Biostatistics, on January 24, 2020 posted on Facebook: "I am excited to share that I have passed my qualify-

ing exam and will be staying to pursue a PhD after I receive my master's degree in May. There are so many people that deserve thanks for helping me on my journey thus far, so thank you! I love you all so much and would not have made it this far with-out each and everyone of you. Graduate school is a very hum-bling experience and I cannot wait to continue to learn, grow, and hopefully make some lives better along the way."

Graduate **Mastin Tapp** reported on March 9, 2020: "I found a financial analyst position at Willis Towers Watson, an insurance

broker, and I am about to begin studying for my actuarial exams! We are planning a Pi Day celebration at the office."

Graduate **Callie Lane**, also a graduate student at KU Medical Center, reported on January 14, 2020: "I am in the middle of my 2nd year out of 3 and will be done with classes in July [2020]. Then I will be working in physical therapy clinics full time until I graduate in Spring 2021. I was accepted to the LEND program that works with children with disabilities, so I have been doing a lot with that and will be working in a lab in Lawrence this semester. I am planning to use my math skills while I'm there to help with the data they collect."

Kim Magee (BS Mathematics and Statistics 2013) was profiled in UMKC's Perspective Magazine on Nov. 18, 2019, https://perspectives.umkc.edu/destined-to-fly/ "Alumna takes her math skills to the skies as a competitive hot air balloonist."

Ryann McIntosh (BS Mathematics and Statistics 2015), now employed at Sprint, was pictured in the Kansas City Star on October 14, 2019. https://www.pressreader.com/usa/the-kansas-city-star/20191014/281509342948079

13 Math Majors on the Spring 2020 CAS Dean's List

Gregory Attard	Dominic Guillen	Loubna Ouaret
Zachary Bailey	Nina Han	Grace Reesman
Sindhu Balakumar	Allyson Jenkins	Samir Taheri
Joel Busch	Harrison Maksimik	Jacob Wingert
Cole Flackmiller		

Nina Han (profiled earlier in this newsletter) reported on Oct. 26: "I officially accepted my offer last Friday, and I am starting on November 2! I will be an actuarial analyst (property and casualty side) at **Armed Forces Insurance**, which serves military families. Getting an entry-level actuarial position was competitive and challenging. I heard from my mentor who is an actuary at Swiss Re in downtown KC that August to November is the biggest hiring season for actuaries, so I started in August, right after passing my second actuarial exam. I would strongly recommend math undergrad students to do a few internships to get real-world experience in data analysis, programming, and business problems. Also, participating in the CAS (Casualty Actuarial Society) summer program was helpful and employers liked that I took my time to learn about the actuarial profession. Most of all, building technical skills (Excel, SQL, in depth knowledge of one of Python, R, etc.) and being able to explain what I worked on using my technical skills were critical in every interview."

What do students say about UMKC Math & Stat professors?

Dr. Mawella was extremely helpful in being available outside of class and making sure students are caught up if they miss the lecture. She truly goes above and beyond the call of duty as a professor. She works her way systematically and thoroughly through every problem and sets the class up for success on every exam. She bends over backwards to provide visual aids and supplemental materials and responds to every student's concerns. Best teacher I've had at this school. Give her a goddamn raise.

I never thought I would say this about a math course, but I really enjoyed this class and understood the material much better than I expected I would. I appreciate that **Ms. Stephanie Van Rhein** made herself available to answer student questions and provide guidance, and the course was laid out so succinctly that it was rare to have to reach out to her. Great class! She was so very polite and resourceful. She would spend 3-4 hours with me on a Friday night doing math, extended anything and everything I needed through this rough semester I had. She is super empathic and was just truly meant for teaching, I'm glad I got to experience her as a professor.

Dr. Bani has not only taught me vital information, but also taught me how to effectively prepare for, participate in, and present research. In both of the courses have taken with him, his dedication to supporting me as a student and preparing me for my career has led me to success in each particular course, and in my academic pursuits.

Student's note about **Professor Delaware's** active learning innovations: "I LOVE them! I… wish we could do more of them. I learn the most about mathematics when I actually DO mathematics... What is so wonderful about the board days is that they not only give me a chance to start to tangle with the material, but they allow me to do this under the guidance of a teacher and other students... the best of both worlds to me. I get to DO mathematics *with* expert advice… Another student can sometimes communicate how to do something in a different way than the teacher and provide exactly the kind of insight I need… board days also provide a much needed change of pace… like a breath of fresh air."

Professor Sega deserves every bit of credit for being a good teacher. She is an awesome instructor. I have learned a lot. She was prompt in grading and giving timely feedback on homework. Well-organized. Great class lectures.

Student Organizations associated with the Department of Mathematics and Statistics

The purpose of the UMKC Chess Club is to provide a friendly environment in which its members may play, instruct, and discuss chess. The Chess Club will supply chess sets and clocks for its members. It also holds at least one open tournament annually, for all interested UMKC Students and future potential students. The Chess Club is dedicated to advancing chess by offering instruction to all UMKC students and future potential students.

Find out Chess Club meetings and activities at: https://roogroups.collegiatelink.net/organization/ucc/documentlibrary

The UMKC Math Club promotes interactions between faculty and undergraduate students; provides math-related activities such as problem of the week, math movie nights, and math contests; invites math alumni and various employers to give insight into the current math job market; facilitates communication between math graduate and undergraduate students.

Location: Manheim Hall Room 205 C

You can learn about Math Club meetings and activities at https://roogroups.collegiatelink.net/organization/umkcmc
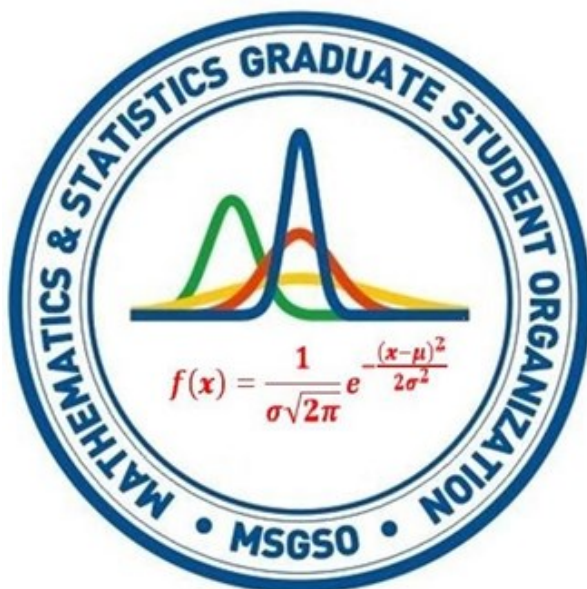
The purpose of MSGSO is to represent the graduate student body of the UMKC Department of Mathematics and Statistics; to provide a forum for graduate student opinion; to act as a voice for the graduate students in matters of mutual interest to graduate faculty and students; and to promote professional interest and fellowship among the graduate students.
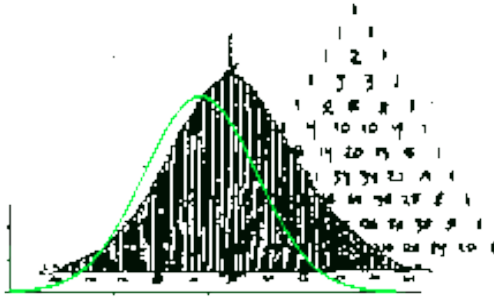
Location: Manheim Hall Room 205 C

You can learn about MSGSO meetings and activities at https://roogroups.collegiatelink.net/organization/UMKCMSGSO

Type address here or use Mail Merge
to automatically address this
publication to multiple recipients.

Visit our Website at http://cas.umkc.edu/Math

Become a Member!

We encourage you to register as a member of the **UMKC Alumni Association**. Just go to the UMKC alumni website www.umkcalumni.com , click on the tab at the top of screen called "MY PROFILE/LOGON", and follow the instructions.

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: **Dr. Richard Delaware** at delawarer@umkc.edu

or
RooMath News, Dept.of Mathematics & Statistics, HH206, University of Missouri-Kansas City, 5100 Rockhill Rd, Kansas City, MO 64110

Department Contacts

Chair: Dr. Majid Bani-Yaghoub
Principal Graduate Advisors: Dr. Liana Sega (Math) and Dr. Kamel Rekab (Stat)
IPhD Coordinator: Dr. Noah Rhee
Undergraduate Advisor: Dr. Eric Hall
Precalculus Algebra Coordinator: Ms. Kris Kathman
Elem. Stat Coordinator: Dr. Mawella
Calculus Coordinator: Dr. Liana Sega
Administrative Assistant: Tanya Henderson hendersontg@umkc.edu