



Changes in Rarick

After a year of hearing the soothing sounds of jack hammers, smelling the sweet aroma of things burning, inhaling the dust flying around the hall, and cancelling classes due to a potential chemical spill, the construction in Rarick Hall is “finished.” After the Department of Art and Design moved to the new Schmidt Foundation Center for Art & Design, the first floor of Rarick was completely gutted. The redesign of the first floor included many new offices, classrooms, study areas and the Foundry was turned into a great location for students to hang out. Most math classes are now held on first floor which allows the Math and Computer Science faculty to get their exercise throughout the day. Renovations also took place on second and third floor. You remember the room where you endured sequences and series and listened to hundreds (or 30) seminar presentations? Yes, the room formerly known as RH 323 has now become a little hallway with offices. The MACS Club now has Pizza Parties in the Foundry located in the northwest corner of first floor.

The Tiger Family is Important and Always Welcome!

Now more than ever, we would love to hear from you!!!!

Great things continue to happen in our department. We cannot succeed without alumni and friends. Your gifts, information, hiring of graduates and interns, and even simple things like spreading the word about the strengths of our department, our students, and faculty, **are all important**. You are always welcome to stop and visit with faculty and students!



Mr. Jeff Sadler, Lorenz Manabat, Sianna Miller, Nicole Voss, Dr. Keith Dreiling, & Lailah Collins are enjoying pizza and conversation in the Foundry.

The best part of the Rarick Renovations (other than when it ended) is the reunification of the Math Department and Computer Science Department. Although we are still separate in name, Computer Science Faculty Dr. Zeng, Dr. Hourani, (pictured below) and Dr. Ghunaim moved back into Rarick from Hammond Hall.



Far More Capable than we Realize

By: Diana Sabados

There I stood, staring at the beautiful honey-colored limestone buildings of Fort Hays State University. Day one. Excitement, nervousness, wonder, confusion, chaos all swimming in my head, knocking against the inside of my brain. In turn, my stomach responded with the flapping wings of butterflies fluttering in vain effort to control my emotions. I finally made it to the place I would call home for the next four years. Only a couple of days before, the



possibilities seemed endless as I packed up all my belongings into my extremely oversized 1993 F350 pickup – handsomely named Bert – and made the trek from Denver to good Ol’ Hays America. I visibly remember the first time pulling up to McMIndes Hall; I was so excited to meet my new roommate and start life on my own. Little did I know how far this new place would push me and form me into the person I am today.

Each year better than the last, it was throughout my 4 years at FHSU that I met my soon-to-be-husband, my best-friends, and learned both hard and needed lessons in life. This story won’t just navigate the journey of a young college-aged-girl, who found love and found herself, despite the desires of my more whimsical audience; it will also unfold a story of how an amazing place helped mold a young woman into a confident, effective,

grounded, and passionate person. So, amongst all of the personal growth, I landed myself in the best department on campus - the Mathematics Department.

It is truly amazing that I was able to enroll into Calculus 1 Fall Semester 2016. I felt grateful that I was admitted into the class, as I still had to shamefully sing the quadratic formula song – ever so quietly to myself – anytime I wanted to find the zeros of a quadratic function. I must admit, this is the first time I have ever spoken about this monstrosity out loud, and it is interesting that I am doing so in an article, for an unknown audience. Nevertheless, I am sure Mr. Sadler knew that I was way in over my head. Like all the faculty and staff at Fort Hays, Mr. Sadler wasn’t afraid of a challenge, and it was through this class that my love for math flourished. The professors at FHSU never failed to provide a learning environment that allowed me to struggle with the subject, which then helped me learn.

Always knowing that I wanted to be a teacher, I had picked a Mathematics Education major. Luckily, FHSU sparked more than that interest in my heart, as I was now navigating my degree with passion and charisma. I quickly understood my calling; I wanted to be a math teacher who went above and beyond for the struggling students in her classroom. I wanted to teach the number-shy and equation-worried individuals who took on the challenge of mathematics in high school. I wanted to be a teacher who emulated the grit and determination of the professors at Fort Hays.

The opportunities to practice this calling on campus and in town were numerous; I really enjoyed the practicums I engaged in and the tutoring experience I received working for the Math Department. These experiences have made me equipped to now run my own tutoring service outside of the classroom for students needing extra math help. I have the pleasure of working with students ranging from 4th grade all the way to students in AP Calculus courses. Each student I work with reminds me of the importance of the learning process and how essential it is for a teacher to guide and celebrate student successes. My experience tutoring translates seamlessly into my classroom at Northglenn High School.

Northglenn High School holds a very special place in my heart. Through my position here, I have become a more empathetic, articulate, and passionate educator. I now work with diverse students from all around the hemisphere. I have high school students who are for the first time experiencing a formal education and speak little, or no English, to students who have been successful in every grade. The juxtaposition of various levels of educational exposure in my classroom presents a difficult challenge.

I am grateful that I can firmly rely on the foundations set at FHSU focused around equitable education and how to achieve this in my classroom. It is empowering to see all my students succeed by increasing what they came into my class knowing. I continue to work to close the gap of knowledge separating students. My students are truly an inspiration and I often explain to them that I have more to learn from them than they do from me. While I may teach the truth about linear equations, function behavior, and algebraic processes – my students have done a far better job of creating an environment where everyone can learn from different perspectives.

Now two years into my career, I have learned that there is so much more to gain in a math classroom than merely the sludges of number-sense, memorization, and calculation accuracy. I have learned that the study of mathematics provides the attributes of determination, perseverance, and a sense of confidence that allows a person to reach their full potential. It is apparent to me now that stepping into all that a person has available to them is only achieved through struggle, a convenient by-product of making sense of mathematics. My Northglenn High students are truly capable of far more than they realize and it is an honor to navigate this reality in my classroom.

The perspective I now have was planted during my time in the math department at FHSU. Having graduated in 2020, at the start of the pandemic, I was never able to walk across the stage and thank the ones who nurtured my learning as a young adult. So now, I would like to formally throw my graduation cap in celebration of the team who made me who I am today. Hats off to the Department of Mathematics at Fort Hays State, for they have no idea of the magnitude of their impact. I will be leaving my current position at the end of this academic year to start a new life with my husband in Wyoming; it is an honor to have left a part of the FHSU community at Northglenn, and it is with great pride that I will bring it to wherever I land next.

Trevor Fischer

I came to FHSU in the fall of 2019 and started with a major in computer science with very little insight as to what all I would learn throughout the program. Three years later I am still a computer science major and have learned many amazing skills in web development, programming, and problem-solving. Over the course of these last three years, I have learned to program in many different programming languages such as Java, Python, HTML, and C++, just to name a few. The Computer Science Department is filled with knowledgeable and insightful teachers that have helped me throughout my major. Even through the difficulty of online classes during the COVID-19 pandemic, the amount of support and communication I received in my classes was phenomenal. As I go into my senior year in computer science, I'm looking forward to seeing what else I can learn through this program, and I highly recommend it to anyone looking to pursue a career in the field of computer science.





Elle Bultena

I arrived in Hays to the Kansas Academy of Mathematics and Science program amidst a sea of uncertainty in Fall 2020. Most classes that semester were online, and no one was certain how long we would be able to stay on campus, which thankfully turned out to be the entire semester. I hail from Sublette, a small town in southwest Kansas, and I had exhausted all the math classes at my high school. I had decided in my sophomore year that I wanted to do something in the STEM field, but I wasn't sure if I wanted to do physics, math, or something else entirely. I was eager to take advantage of new opportunities at FHSU and started my first semester taking Proofs and Calculus II.

I had always wanted to explore math farther than the number problems typically taught in high school, and calculus was a satisfying expansion, but even better was proof-based math. I enjoyed the abstraction and the clear argumentation and flow of logic. It felt like learning a new way of thinking. This experience cemented my desire to pursue mathematics. I began studying graph theory that semester to prepare for doing research as well.

The next semester, I jumped into research, Discrete Structures, and Calc III. I had been wanting to research in pure math since before I came to FHSU, and it was thrilling to finally have the opportunity. Dr. Mitra was a wonderful mentor to work with, and my future of grad school and research began to appear more clearly. That spring, I was able to present at the Kansas MAA meeting, as well as participating in the team math contest, which FHSU placed second in. Learning how to communicate complex mathematical ideas, as well as seeing the research that others had been working on, was very impactful, and I hoped to be able to present my research again. I presented to the department in the MACS seminar last fall, and will present at a national conference this summer. I am very grateful to FHSU and Dr. Mitra for giving me the resources to be able to gain experience in math research, and this is perhaps my favorite part of my time here.

Of course, I greatly enjoyed all my classes because the professors here are amazing. Dr. Mitra, Dr. Young, Dr. Bhoumik, and Mr. Sadler have all nurtured me in my mathematical journey, and I am eternally grateful for the support the department provided.

FHSU Students Present and Compete at KSMAA

The KSMAA conference was in person at Benedictine College in Atchison, KS on April 8-9. We missed the opening speaker even though we arrived early to Atchison, after fighting the wind, passing fires at Junction City, and detouring through Missouri. Even with the delay, we still had a great time together seeing old friends and meeting new. FHSU was well represented as Dr. Dreiling, Dr. Weber, Dr. Zeng, Dr. Mitra and Dr. Bhoumik presented research on Saturday.

In addition to the faculty presentations, Lailah Collins presented her seminar research concerning various numbers throughout mathematics. Students Sanghoon Lee and Seung Gu Lee placed fifth while Peilin Zhang, Chunlin Feng, and Lailah Collins placed fourth in KSMAA Problem Solving Competition.



FHSU Math Education Majors Continue to Receive Benefits through NSF Noyce Program

Despite the constant reminder of the coronavirus, the FHSU Noyce program continued to plug along during the 2021-2022 academic year. Emma Reif (Hoisington senior), Keagan Shubert (WaKeeney junior), Nathan Stark (Liebenthal junior), Karisma Vignery (Minneapolis senior), and Nicole Voss (Pratt senior) received scholarships for nearly \$14,000 each as they continue to work toward their math & education degrees at FHSU. We look forward to the continued professional growth of our students as we are beginning to send them to conferences again in Spring 2022. The students also continue to meet once per week for their seminar course; where they discuss issues with teaching in rural school settings.

A newer element of the grant will again occur during the summer of 2022 when we have our latest installment of the Noyce summer conference for all current and previous FHSU Noyce awardees. The conference will be a one day event, and be held on Monday, June 13 on the FHSU campus. We look forward to seeing many former awardees, as it is a great opportunity for those teaching in the field to network with our current pre-service teachers. Building a strong community of math teachers is a key component of our grant, and hopefully this conference will provide that avenue.

We are currently wrapping up year four of a five year Noyce cycle, so if you know of any students who you think might make great math or science teachers, please give them my contact information at bweber@fhsu.edu ; I'd love to visit with them about the program! We have one year remaining in which to award scholarships. To be eligible for the grant, students must be at least of junior status, meaning they must have completed at least 60 credit hours of coursework. Other requirements include a minimum GPA, active participation within the local STEM education group, and a commitment to teach math/science for 2 years after graduation. Specifics can be found at <https://www.fhsu.edu/smei/noyce/>

During the previous 10 years of awarding Noyce scholarships, 26 math education majors were awarded scholarships (some for two years and some for one year) totaling nearly \$563,000 through the NSF Noyce Program. Of all the math education majors who have been supported through this grant, 20 of them are currently teaching, one is substitute teaching until the fall, and five are current students finishing their coursework. What I believe is most impressive is that (to my knowledge) ALL of our math Noyce awardees are still teaching, even if they have completed the service requirement from the grant! They truly are the next generation of math Teacher-Leaders, and their students will most certainly benefit from their dedication and expertise in teaching mathematics!



Noyce Scholars Nathan Stark and Emma Reif presented on Building Thinking Classrooms at the Kansas Association of Mathematics Teachers (KATM) Conference 2022 in Emporia KS. Nathan (Hays, KS) is majoring in secondary math education. Emma (Hoisington, KS) is majoring in middle school math education.



Faculty Awards

Professor Emeritus Mohammad Riazi

Congratulations to Dr. Mohammad Riazi for receiving recognition as Professor Emeritus. Mohammad joins Dr. Rosalie Nichols, Dr. Ron Sandstrom, Dr. Ellen Veed, and Dr. Charles Votaw as other members of the Department of Mathematics who have been granted this honor.

2021 Faculty Scholarly Activities

Faculty from the Department of Mathematics and the Department of Computer Science were actively involved in scholarly research, even though Covid travel restrictions limited participation in conferences. Faculty worked with nine KAMS students on research projects, conducted a weekly problem-solving session with students, served as seminar advisors for five students, and presented weekly seminars. The following is a list of scholarly activities by mathematics and computer science faculty in 2021.

Weekly seminars

On Prime Labeling

On (a,d)-Irregular Total Labeling of Some Family of Graphs

Groups from Days Gone By

Groups, Conjugates, and Equivalence Relations

The Hat Function (Again)

Are We There Yet?

Metrizability of Finite Topological Spaces

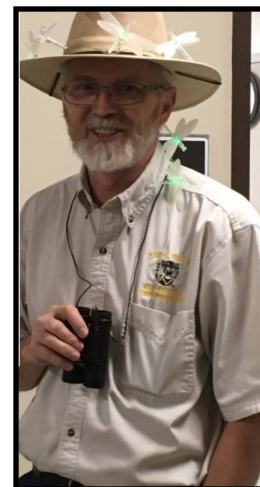
How to Draw a Hat

A Java Program Does Graph Labeling

How To Make the Right Decision Using Decision Making Techniques

Newton's Divided Differences

How Many Skittles Does It Take...



Presentations

Graph Theory and Computing, presentation at the 52nd *Southeastern International Conference on Combinatorics*, Florida Atlantic University (Virtual)

On Irregularity Strength of Some Families of Graphs, presentation at the MAA Kansas Sectional Meeting (Virtual)

The Hat Function, presentation at the MAA Kansas Sectional Meeting (Virtual)

Mental Math + Common Core + The Standard Algorithm, presentation at National Council of Teachers of Mathematics Virtual Conference

Student Presentations of Collaborative Work with Faculty

An Optimal Classifier to Predict Diabetes Likelihood at Early Stages, [student poster presentation at the 16th Annual John Heinrichs Scholarly and Creative Activities Day](#)

Supplement E-Commerce Web-Based Application, student poster presentation at the 16th Annual John Heinrichs Scholarly and Creative Activities Day

Fibonacci Cordial Labeling of Some Planar Graphs, student presentation at the MAA Kansas Sectional Meeting (Virtual)

Faculty works that were accepted for publication

Selecting the Best Software Product Using AHP and Fuzzy AHP Modules, *International Conference on Software Engineering and Technology*

L(3,1)-Labeling of Circulant Graphs, *Discrete Mathematics, Algorithms and Applications*

Channel Assignment Problem on Circulant Graphs, *International Journal of Computational and Applied Mathematics*

Queuing/Counting Automata, *Journal of Multidisciplinary Engineering Science and Technology*

From Cloud to Mobile Computing, *International Conference on Nanoscience and Nanotechnology*

Other Notable Achievements

Summer Grant for Research and Scholarly Activity

Research Speed Networking Seed Grant

Guest editor for *Infrastructures Journals*, *Security of Data & IoT Infrastructures*, *Cyber Security*, and *Intelligent IoT Techniques*

NSF Noyce Grant, Recruiting, Preparing, & Retaining STEM Teachers for Western Kansas



Math Relays 2021

By Bill Weber

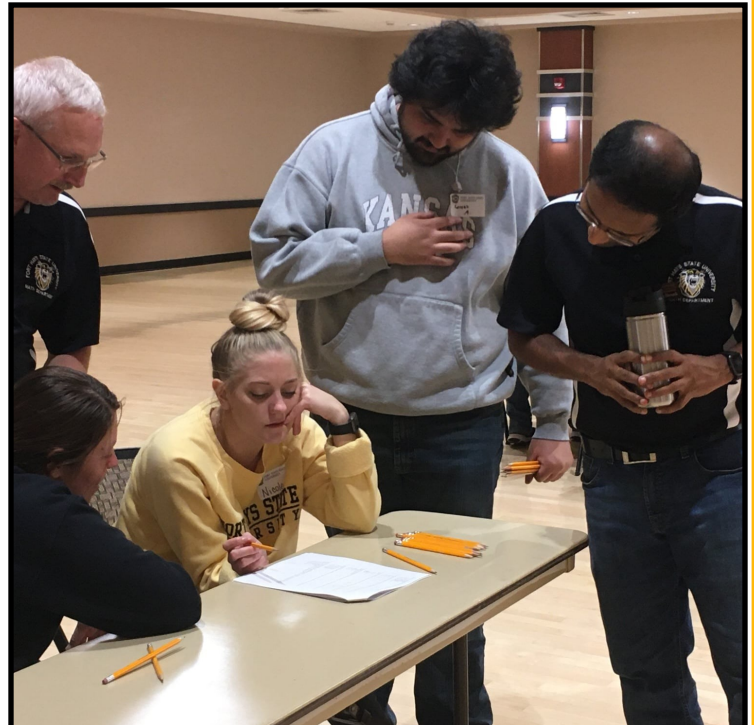


Another successful Math Relays is in the books, as the FHSU Math & Computer Science Departments hosted the 42nd Annual Math Relays on November 11, 2021. Due to the lingering effects of COVID, we were down a bit on numbers, but were still able to host over 400 students from 31 schools on that day! Everything went really smoothly, even with the fire alarm going off!

In class 1A, the team champions were once again St. John's Catholic, followed by Tipton Catholic in 2nd, and Osborne 3rd. In the 2A/3A category, Ellsworth won top honors, with TMP-Marian 2nd and Minneapolis finishing 3rd. Within the 4A-6A category, Hays High brought home top honors, with McPherson 2nd, and Salina Central 3rd. For a complete listing of team placing and individual winners, please check our website <http://www.fhsu.edu/macs/Math-Relays/Past-Winners/>

In addition to the competition, we also had FHSU math faculty available to visit with students about what it means to be a math major at FHSU, as well as games to play and puzzles to solve for students during their non-testing times. We visited with a large number of students; hopefully this will entice some of them to consider a degree in math from FHSU! Our alumni can be a great source of recruiting also, so if you know of a student in your local community who might be a good math major, please have them contact me at bweber@fhsu.edu so we can discuss the possibilities.

The 43rd Math Relays will be held on Thursday, November 10, 2022. We look forward to another fun day of hosting the best and brightest math students from our area on the FHSU campus!



You may be wondering how many mathematicians it takes to solve a Math Relays Test. Students Sianna Miller, Nicole Voss, & Lorenz Manabat and Professors Dreiling and Bhoomik still do not have an answer to this question.



The fire alarm only caused a small delay.

New Faculty — Hussam Ghunaim

My name is Hussam Ghunaim, I am originally from Jordan. I've spent most of my life roaming around the world and discovering the beauty each place had to offer. To feed my curious soul, I moved to a couple of different places before settling down with my family here in Hays!! Starting with UAE (where Dubai city exists), I spent most of my life there until I completed my school years and undergraduate degree. After some years of teaching, I decided to move on and continue my education. Miraculously, I managed to receive my master's from London South Bank University in the UK and my Ph.D. from the University of Bridgeport in Connecticut. Teaching in different countries allowed me to work with students from diverse academic and cultural backgrounds. I remain as passionate and joyous about teaching to this day as when I first started, because no matter where I taught, my students would always inspire me and teach me something new every day. There is never a dull moment when teaching.



I enjoy traveling and going on various adventures, especially meeting new people. Though, getting old and having four children (so far!!), does not always make it easy. My oldest daughter is a junior at FHSU, I am very proud of her and all her accomplishments thus far. The remaining three children are on the waiting queue.

My wife, who is an incredibly supportive person, has helped me acquire everything I have now. Without her continuous efforts and care, I truly would not be who I am today.



MACS Club/KME

The old foundry in Rarick has been transformed into a comfortable space for students to study or gather for social time. The MACS Club has taken advantage of this new space to host our ice cream socials and pizza parties. We kick off the school year with an ice cream social to welcome new and returning students. Pizza is also provided several times throughout the year, with the most recent one to celebrate TWOsday, 2/22/22! And we can't forget about our annual celebration of PI Day, with faculty bringing pies for the Pi Loving Students to enjoy. What a great opportunity for students to get to know each other and become better acquainted with their teachers and to enjoy each other's company. Officers for MACS Club are Sianna Miller and Nicole Voss. Membership includes more than 20 students, faculty and staff.

New Faculty — Paul Flesher

Returning to the department has been and continues to be a tremendous blessing. My interest and appreciation for mathematics blossomed in these halls under the tutelage of many of the current faculty members, whom I now get to call colleagues. Experiencing the familiar, now from the faculty rather than the student perspective, has only broadened my understanding and appreciation for the department and its work. I am now privy to the work and interaction behind the scenes, which has turned out to be joyful, fraternal, meaningful, and intentional. These characteristics foster a positive work environment and support our shared educational endeavor. It is probably needless to say, but I am grateful for this opportunity to work in their midst.



With most things in life, our interest and motivation mature as we develop and experience the world to a greater extent, and this rings true with my approach to mathematics. This process might be best described as a purification of intention. In the early study of mathematics, the courses are computationally heavy. I very much enjoyed the mental engagement required in setting up each problem and carrying out the computation to arrive at an answer. As I entered into the primarily conceptual courses centered on proof, I became enthralled by the rigor and explanatory nature of mathematics. Mental intrigue and the desire to understand the interaction of mathematical objects drove my study.

As I matured, I began to reflect upon my life, its meaning, and its purpose. I had grown accustomed to the great explanatory power of mathematics and sought that depth of explanation in the questions of life. In seeking and finding answers to these questions, I began to address my interest and activity in mathematics. Why was I doing what I was doing? This is a question of intention. In essence, I engaged in mathematical thought for mental intrigue, to have something engrossing and systematic to think about.

Mental activity and analyzing interaction are both not inherently bad things, but I found that my interest failed to meet the threshold of meaning necessary to satisfy my conscience. My motivation drew mathematics inward toward the self, rather than outward towards others and the pursuit of truth. This realization thus led me to engage in my current quest answering: What is mathematics? Why do mathematics? When to do mathematics? These are questions in the philosophy of mathematics that relate to metaphysics, epistemology, and anthropology. There are many possible answers to these questions. Have you pondered these questions? If not, please consider it; it might change your life



Faculty Update — Judy Brummer

After 15 years of dedicated service to the FHSU MATH Department teaching Intermediate Algebra, College Algebra, and a combined course, Mrs. Judy Brummer has decided to accept the Assessment and Accreditation Assistant Program Director for the College of Education. Judy will have the opportunity to analyze data and use her mathematical background in a different setting.

Luckily, Judy will only be moving to the second floor so we expect to see her at pizza parties and the Christmas Party.

Thank you Judy for all of your hard work! You will be missed.

RETIRED FACULTY NEWS

Charles Votaw

The past year has been rather uneventful. I think that I have more or less recovered from my bout with covid and associated problems. While I am not back to the health condition I had before I was infected, I am in much better condition than I was at this time last year. We are pleased to be in reasonably good health and in a position to wish everyone well.

Ruth Pruitt

We are just mostly staying home where it is safe.

Mary Kay Schippers

We traveled again! We saw people! We had farm visitors! I put on makeup and fixed my hair! I wore something besides a t-shirt and cargo pants! (Danny, upon seeing me fixed up one evening, said with all sincerity, "Wow!" I couldn't help but wonder...what was he thinking when he saw me in 2020?)

Anyway, once we received our Covid shots, we re-entered the world. We saw our vaccinated children and grandchildren several times traveling to both Rapid City and Phoenix. We also went "glamping" with Jared and family in Custer State Park and stayed at the San Diego beach with Brent and family. We went to a Chiefs game, flew to San Antonio to see my sister, attended the Symphony in the Flint Hills and spent a week with our kids (grandkids) in a cabin on the outskirts of Zion National Park in Utah over Thanksgiving.

We also had lots of farm visitors – friends and family who were vaccinated as well and looking for a safe place to hang out.

As much as I love my farm animals, in 2020 I realized that I also need people. So, in 2021, we made up for lost time. Sometimes you just don't appreciate what you have until you can't have it.

Rosalie Nichols

Weeden has been in the hospital all week and is now recovering from surgery. With covid there's very little to relate. We've been very cautious.

Condolences

The faculty of the Math Department & Computer Science Department expresses their condolences to the family of Kerry & Dorothy Bahl. The Bahl's have been very generous donors to scholarships and faculty development at FHSU. We are very thankful for their service and generosity.

[Kerry Bahl Obituary](#)

WE ARE ONLINE!!!!

**Check out our Master of Science in Education with an
Emphasis in Mathematics at the following link:**

www.fhsu.edu/macs/academic-programs

CLASSES AVAILABLE THIS SUMMER & FALL

THANK YOU FOR YOUR SUPPORT

The Department of Mathematics/Department of Computer Science enjoys this opportunity each year to list the donors who have given so generously to our department. Without your contributions it would not be possible for us to award scholarships to our deserving majors. Please check out the list of students receiving scholarships. We wish to thank each of you who have shared your financial resources with the university and especially wish to thank those of you who have designated the Mathematics Department and/or the Computer Science Department as recipients. We also appreciate the employers who matched your contributions.

Tom and Tina Albers, Lavern and Cari Andrews, Connie Ausland, Wendy Beougher, Duane Blaesi, Jerry and Edith Bollig, Susan Bozeman, Jerry and Michelle Bremenkamp, Stephen and Judy Brummer, Darren Brungardt, Robert and Nancy Chaffin, ConocoPhillips, Anita Curtis, Thomas and Emily Decker, Ronald and Angela DeVore, Scott Claassen and Francine Dreiling, Keith and Pam Dreiling, Yan Du, Dennis and Diana Echard, William and Debra Fox, John Fritzler, Rodney and Marica Giess, Marilyn Griest, Al and Marilyn Herren, Roger and Teresa James, Stewart and Donna Jarvis, John and Regina Johnson, Mike and Carmen LaBarge, Roger and Darlene Lauer, Larry and Donna Leitner, Aaron Lessor, Max and Thelma Liggett, Thomas Lonnon, Yan Ma, Jim and Shirley Malcolm, Maria and Perry Mick, Merrill Milham and Ann Davidoff, Ronald and Debbie Miller, Regina Miller, Mutual of Omaha, Sharon Nagel, Wayne and Alberta Neel, Sylvia Nelson, Jeff and Melissa Pinkney, Larry and Darlene Plymell, Richard and Debora Rawlings, Mohammad and Seddigheh Riazzi-Kermani, Anita Rodarte, Richard and Sharon Ruder, Mary Rudman, Jeff and Lori Sadler, Ron and Cathy Sandstrom, Gaylene Shank, Gail Stanley, Rick and Jessamyn Staples, David and Betty Taylor, Ken and Linda Trimmer, K & L Trimmer Foundation, Ellen Veed, Charles and Reta Votaw, Bill and Tiffany Weber, Rex and Margaret Wilson, Leroy and Sharon Winklepleck, Lane Young, Jian Sun and Kejun Zhang, Hong Biao and Michelle Zeng.

SUMMER MATH CLASSES BEGIN JUNE 6

UNDERGRADUATE

MATH 010 — Intermediate Algebra
MATH 101 — Contemporary Mathematics
MATH 110 — College Algebra
MATH 122 — Plane Trigonometry
MATH 250 — Elements of Statistics
MATH 331— Calculus Methods
MATH 631— Advanced Calculus

GRADUATE

MATH 883— Concepts of Calculus
MATH 805 —Problems in the History of Math

CHECK OUT OUR GRADUATE CLASSES OFFERED FALL 2022

2021-2022 Department Scholarships

By Jeff Sadler

The Fort Hays State University Mathematics Department and Computer Science Department continues to award substantial financial scholarships to many students pursuing a computer science degree or a mathematics degree or minor at FHSU. Donated monies by supporters of the Mathematics Department and Computer Science Department as well as funding from other sources provided over \$100,00 in awarded student scholarships during this past year. The scholarship dollars awarded this past 2021-2022 year helped over fifty students with costs associated to their university education. And more endowed scholarship funding is being established by alumni and friends of the departments for upcoming years, including Foster-Dieckhoff Mathematics Scholarship and the Gary Younger Memorial Scholarships.

During this past year, students working on a major or a minor in mathematics or computer science were awarded over \$35,000 in both prestigious named-scholarships and general department scholarships. These scholarships are funded through both endowed funds and other designated contributions, some pledged during the annual Tiger Call. The following FHSU students received both high recognition and significant scholarship dollars through named-scholarships:

Sianna Miller (Goodland)—Moore Family \$1,000 Scholarship
Karisma Vignery (Minneapolis)—Moore Family \$1,000 Scholarship
Nathan Stark (Liebenthal)—Moore Family \$1,000 Scholarship
Lorenz Manabat (Topeka)—Etter \$1000 Scholarship
Karisma Vignery (Minneapolis)—Elton & Wendy Beougher \$1,000 Scholarship
Ethan Klausmeyer (Hays)—Veed \$700 Scholarship
Ryan Lalicker (Goodland)—E.E. and L. Colyer Memorial \$750 Scholarship
Trevor Fischer (Sharon Springs)—Ron and Cathy Sandstrom \$750 Scholarship
Nicholas Zimmerman (Hays)—Ruth and Roger Pruitt \$1,000 Scholarship
Cameryn Kinderknecht (Ellis)—Marshall \$700 Scholarship
Caitlyn Burr (Salina)—Ogle \$500 Scholarship
Hannah Bailey (Norton)—Ogle \$500 Scholarship
Levi Hickert (Hays)— P. Miller Math/Physics \$1,000 Scholarship
Cheyenne Kinderknecht (Centennial, CO)—Schippers Family \$2,000 Scholarship
Sara Wyse (Hays)—Zeng \$700 Scholarship
Maggie Speno (Hays)—Denio \$1,000 Scholarship
Sienna Miller (Goodland)—Dr. Caroline Ehr \$500 Scholarship
Andrew Neuman (Cimarron)—E. Eltze Memorial \$800 Scholarship
Seth Boxberger (Russell)—Milham-Wasinger Annual Family \$2500 Scholarship
Lailah Collins (Wichita)— Milham-Wasinger Annual Family \$2500 Scholarship
Matthew Hogan (Wichita)—Baxter \$750 Scholarship
Elle Bultena (Sublette)—F.E. Schockley KAMS \$300 Scholarship
Fisher Kent (Maple Hill)—F.E. Schockley KAMS \$300 Scholarship
Joe (Yao-Wen) Lieu (Taouyan City, Taiwan)—F.E. Schockley KAMS \$300 Scholarship
Adam White (Rossville)—F.E. Schockley KAMS \$300 Scholarship
Henry (Hank) McVeigh (Lincoln, NE)—Tebo Family \$850 Scholarship
Hunter Moore (Hiawatha)—Toalson \$1000 Scholarship
Janet Kuhlmann (Stockton)— C.W. Lowry \$700 Scholarship
Cameron Miller (Solomon)—K. and D. Bahl \$750 Scholarship
Nicole Voss (Pratt)—K. and D. Bahl \$750 Scholarship
Victoria Rucker (Hoxie)—K. and D. Bahl \$750 Scholarship
Cade Boxberger (Hoisington)—K. and D. Bahl \$750 Scholarship
Isaac Howard (Hays)—K. and D. Bahl \$700 Scholarship
Tu Dinh (Philadelphia, PA)—K. and D. Bahl \$700 Scholarship
Kira Luethe (Eugene, OR)—K. and D. Bahl \$600 Scholarship
Keagan Shubert (Wakeeney)—Mathematics Department \$700 Scholarship
Belle Finney (Beloit)—Mathematics Department \$500 Scholarship
Kaitlyn Hillery (Winona)—Mathematics Department \$500 Scholarship
Rebekah Porter (Hays)—Mathematics Department \$500 Scholarship

Clifford Anderson (Ada, OK)—Computer Science Department \$500 Scholarship
Alex Hampton (Ocean Park, WA)—Computer Science Department \$500 Scholarship
Clay Kear (Edgerton)—Rice Graduate \$300 Scholarship
Rebecca Downing (Bennington)—Rice Graduate \$300 Scholarship
Noah Fisher (Elmwood, NE)—Rice Graduate \$300 Scholarship
Jason Peters (Hesston)—Rice Graduate \$300 Scholarship
Nancy Tooley (Princeton)—Rice Graduate \$300 Scholarship
Cassidy Snyder (Deluth, MN)—Rice Graduate \$300 Scholarship
Chelsea Haskett (Hays)—Rice Graduate \$300 Scholarship

The FHSU Noyce Scholarship Program (co-directed by the Mathematics Department's Dr. Bill Weber), and the SEMI-Steffen Scholarships (directed by Dr. Paul Adams through the FHSU Science and Mathematics Education Institute) continue to support many mathematics education majors and also other natural sciences education majors. This second round FHSU Noyce Scholarship Program is approaching the end in two more years of a National Science Foundation award cycle. The Dr. Weber and other FHSU faculty are currently planning to apply for a third round of future funding. Due to covid restrictions, the SEMI-Steffen programs were still suspended over the summer of 2021. The following students received over \$63,000 in NSF funded scholarships dollars:

Nicole Voss (Pratt)—\$14,000 Noyce Scholarship (AY 2021-2022)
Karisma Vignery (Hays)—\$14,000 Noyce Scholarship (AY 2021-2022)
Keagan Shubert (Wakeeney)—\$14,000 Noyce Scholarship (AY 2021-2022)
Emma Reif (Dodge City)— \$14,000 Noyce Scholarship (AY 2021-2022)
Nathan Stark (Liebenthal)—\$7,000 Noyce Scholarship (Spring 2022)

Also, funds for the previously named Academic Opportunity Award (AOA) Scholarship are now handled by a newer scholarship program titled the Automatic Scholarship Opportunity (ASO). This scholarship award amount is determined through a matrix that recognizes incoming freshmen to FHSU through one of four scholarship levels and is based upon an incoming freshman's ACT/SAT score as well as high school GPA. The levels are "Tiger Pride Scholarship--\$3,750", "Victor E. Scholarship--\$2,750", "Black & Gold Scholarship--\$2,000", and "Hays City Scholarship-\$1,500". For more information on this scholarship program, please visit the FHSU web pages at <https://www.fhsu.edu/admissions/scholarships/freshmen> . The two departments had several incoming freshman students awarded funds through the ASO scholarship program.

As in the past, the department is seeking assistance in recognizing and encouraging high school students and non-traditional students with an interest or talent in mathematics education or mathematics. The department has a goal to have at least fifteen well-prepared high school seniors and another five non-traditional students begin their higher education in mathematics or secondary mathematics education at FHSU. We are in great need of assistance from friends and alums to reach this goal. Please take the time to contact us with names of such prospective individuals—then the Mathematics Department will reach out to them and demonstrate the benefit of becoming a FHSU Tiger.

FHSU students and faculty are truly appreciative of contributed dollars from friends of the Computer Science and Mathematics departments. If you have questions about departmental scholarships or have the ability to assist in identifying and/or recruiting possible Mathematics or Computer Science majors from your local region, please contact Jeff Sadler by email at jsadler@fhsu.edu or by phone at (785)-628-4416. If interested in contributing either new or continued funds to any scholarship area, please do so by sending a check to the desired department payable to the FHSU Endowment Association—specify the mathematics or computer science scholarship fund of interest or one of the department's unrestricted fund on the memo line.

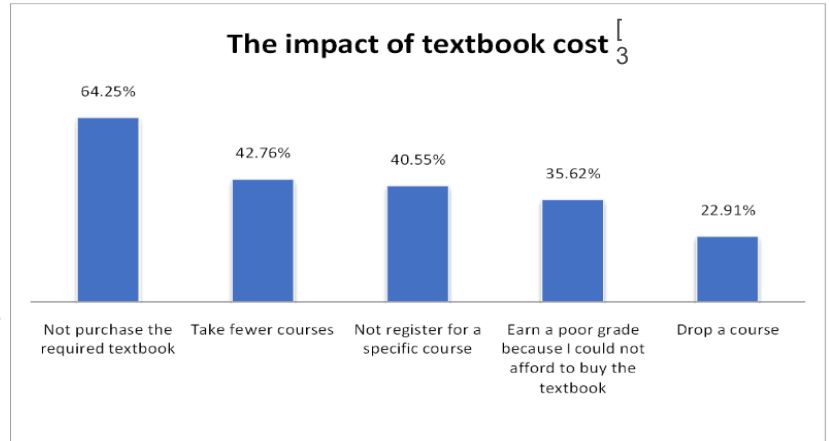


MACS OER Initiative

by Hussam Ghunaim

Open Education Resources (OER) is an initiative to replace commercially available education materials with zero-cost materials. The Kansas Board of Regents (KBOR) OER website^[1] defines OER as: “OER are teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions.” OER includes built-in permissions to retain, reuse, revise, remix, and redistribute the material.

Textbooks costs have increased 1,000% Since the 1970s. FHSU estimates the annual cost of books and supplies to be \$600. To determine the impact of textbook costs on students’ decisions and choices, Florida Virtual Campus’s (FLVC) Office of Distance Learning and Student Services conducted a survey in March and April 2018³. More than 21,000 students participated in the survey focusing on textbooks and courses materials. The most interesting findings were that 64.25% of the students chose to not purchase the required textbooks, while 40.55% chose to not register for a specific course. Other choices are presented in the graph.



Another interesting study conducted by the University of Georgia^[4], showed that adopting OER in addition to saving students money, improved students’ grades and decreased the D, F, and Withdrawal rates for all students.

To this end, FHSU provides support to faculty considering using OER materials in their courses ranging from full support provided by the Forsyth Library staff, to Z-Course grants. The amount of these grants can range from \$500 to \$5000 depending on the amount of original authoring or modification required to proposed course materials.

What can you do to help your students achieve their educational goals?

As faculty, you can participate in helping your students to achieve their goals by working on reducing materials costs. Although this is a time and efforts consuming process, you can at least start thinking about making the change or start by replacing parts of your course materials. Over time, the hope is to reach 100% replacement of the commercially available materials with OER.

If you want to give it a try and start looking for OER materials that suit your needs, Forsyth Library has excellent resources at (<https://fhsuguides.fhsu.edu/OERs/searchbasics>) for available OER including eTextbooks, tutorials, videos, and many others.

You may also can consider creating your own materials. FHSU is a member of the Open Textbook Library (OTL) project of the Open Education Network, which allows faculty and other interested individuals to write and publish their own materials. More information can be found at (<https://pressbooks.directory/>).

The Mathematics and Computer Science departments are one the departments that believe in the importance of taking part in the KBOR OER initiative. Consequently, the MACS OER committee has been established to promote the OER initiative and encourages all faculty to meet regularly and start working on replacing the current high-cost textbooks. For more information, contact the MACS OER committee chair, Dr. Ghunaim at hmghunaim@fhsu.edu.

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