

FORT HAYS STATE UNIVERSITY DEPARTMENT OF MATHEMATICS



FORT HAYS STATE
UNIVERSITY

Forward thinking. World ready.

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Masters of Science in Education — Mathematics

In response to the guidelines put forth by the Higher Learning Commission (HLC), the Mathematics Department at Fort Hays State University is partnering with the Department of Advanced Education Programs to develop a new master's program. In September 2017, the HLC will require that any faculty members whose primary responsibility is teaching must possess a degree at least one level above the level at which they teach. If the degree is in a field other than what he/she is teaching, that faculty member must have completed a minimum of 18 graduate credit hours in the discipline they teach. Teachers who are currently teaching concurrent credit to supplement their income will no longer have this option (if they do not meet the minimum criteria.) In addition, many of our graduates wanting to teach concurrent credit are looking for a viable option to meet the HLC Requirements.

The FHSU Mathematics and AEP departments have collaborated to create a program which can fit teachers' needs. The Master's of Science in Education Program requires 12-15 hours of AEP courses and at least 18 hours of graduate level math courses. All AEP courses will be offered online while the math classes will be partially on campus. The Math Department faculty believe collaboration with other teachers is critical to success in the classroom, therefore we are proposing students come to campus for two days per week in the summer.

This summer students may take MATH 882: Concepts of Algebra and/or MATH 631: Advanced Calculus. MATH 882 will focus on algebra and ways of teaching algebra to our students. The faculty of the Math Department are very excited for this new opportunity. If you, or someone you know, would be interested in a program such as this, please have them contact lyoung@fhsu.edu.

SUMMER CLASSES

On Campus

MATH 882 — Concepts of Algebra

MATH 631— Advanced Calculus.

On-line

MATH 010 — Intermediate Algebra

MATH 110 — College Algebra

MATH 122 — Plane Trigonometry

Math 180 — Concepts of Elementary Mathematics

MATH 250 — Elements of Statistics

MATH 331— Calculus Methods

“The Tiger Family is Important and Always Welcome

Great things continue to happen in our department. We cannot succeed without alumni and friends. Your gifts, information, linkages, hiring of graduates and interns, and even simple things like cheerleading and 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

What are they doing now??— Hailey Davey

Unfortunately, either FHSU didn't offer, or I neglected to take the class in dealing with 10,000 mini, multi-colored balloons that appeared in my Junior-level pre-calc class during the third week of school, or the obstetrics necessary for the "delivery" of a stuffed jacket "baby" by two young men from under their shirts and the concurrently charming acclamation of "what a beautiful baby" by their classmates while attempting to guess the weight. That the courses necessary are offered somewhere in the catalogue I am sure...I just missed them.

I couldn't sleep the night before the first day as a high school math teacher. I was so nervous, I couldn't believe I had gone from sitting in the middle rows to standing in the front in what seemed like an instant. (I know, some of those "instants" seem to drag a little!) But now I was the one in charge of a bunch of young minds, and the responsibility buffeted me like that Hays, KS wind which is never comfortable-too cold in the winter, and heat-inflicted in the summer. I don't think anything can truly prepare you for the first moment you are in front of a room of new students and the words, "Welcome, I am your teacher" come out of your mouth.

Thankfully, I had been well groomed and prepared for this day through the Fort Hays State University Math department. The two most important things that my professors at FHSU gave me were knowledge and confidence. I felt that I could have some swagger walking into the classroom because I had survived and even succeeded in the demanding Math classes FHSU required. I knew that the material would not be overwhelming. I was also confident on the pedagogy because FHSU had well-groomed my teaching techniques through all the mini-lessons and education-based courses. My Dad had told me that the first time landing a fighter aboard an aircraft carrier was accomplished largely by just trusting that the folks who prepared you were pros, and that they had done it right. I leaned on that worthy support idea that first day, and I cannot thank them enough for all that they had given me; I found self-assurance and enlightenment through my time at FHSU that was necessary for my victories that first day, and a LOT OF DAYS SINCE.

The first few months were a total whirlwind. It isn't just the big details like getting your room ready, your lesson plans set up, or the names of your students memorized; it's the tiny details that stack up: understanding how your new school is run, what meetings to go to, to check an email every five seconds, even the bell schedule can be confusing! But underlying the accomplishment of each of these tasks was a degree of satisfaction which cannot be described. I have a meaningful occupation, I am affecting young human lives, and I am a contributor to society.

Be ready for emotional roller coasters of success and failure, and remember that no teacher is perfect. If your lesson didn't make sense, slap a sticky note on there with a new idea for the next time. Teaching is all about improving, from constantly changing to integrate more technology or interactive lessons, to figuring out what clicks in certain students, how to connect with them more, and make their self-confidence and outside-of-the-box thinking grow deeper. Some days you will walk away defeated, and think nothing went right. Remember each day is new, that memories are amazingly short, and that the attitude you present will be that from what the kids feed. If you are enthusiastic, flexible, humble, and try your hardest, so will the students. I have had no classroom management problems because I really tried to incorporate the mentality, "They don't care what you know, until they know you care." If you are the personable, hard-working person that FHSU taught you to be, you will be just fine!

Lastly, remember why you went into teaching. If you start to calculate how much you are making every hour, or consume yourself with the politics, you will be one of the 3-year burn-outs. Stay focused on the idea that you get to be a part of these little people's lives! You will spend more time with them than most of their parents get to, and you will make massive impacts on not only your subject area, but how to be human beings that will better the world. Get excited for the journey you are about to embark on, it will be nothing you have ever experienced before: roll with the punches, get a lot of sticky notes, *believe* in yourself, and most importantly, buy a coffee maker.



Hailey is a 2016 Mathematics graduate. She is currently teaching in Stafford Virginia.

New Faculty — Bader Abukhodair

by Keith Dreiling

The name of the newest member of the Mathematics Department is one of my favorite names to say out loud. Once you learn to say his first and last names together, his name just rolls off your tongue. Bader (pronounced “butter”) Abukhodair joined the Department of Mathematics in the fall semester of 2016. We were fortunate to hire him after a short, summer search within a week of orientation. His outgoing personality enabled him to adjust well to life in Hays and teaching at FHSU in a very short time.

Bader was born and raised in Abudhabi, the capital of the United Emirates and has ancestry in Jerusalem. He moved to the United States in the late 1990’s to pursue graduate degrees and has been here ever since.

Bader graduated from United Arab Emirates University with a Bachelor of Science degree in Mathematics and from Western Illinois University with a Master’s of Science in Applied Mathematics, Numerical Analysis. He published his master’s dissertation: *A Predictor-Corrector Scheme for the Sine-Gordon Equation* in Numerical Methods for Partial Differential Equations Journal, 16:2, 133–146 in March of 2000.

Bader began his teaching career over twenty-two years ago and has taught a variety of courses. At FHSU he teaches College Algebra and Elements of Statistics, but he has also taught Trigonometry, Geometry, and Calculus. In addition, Bader tutors Math ACT, Math SAT, Math GRE, and AP Calculus online and in a face-to-face environment.

Bader’s interests include encouraging mathematical thinking, infusing technology in teaching mathematics, online teaching methods, and pedagogy best practices. His hobbies include watching TV, listening to live radio, politics, soccer, chess, and online social media including but not limited to LinkedIn and Facebook.

Bader has been happily married to Katie for seven years and has two children, Nihad (age 5) and Nur (age 4).

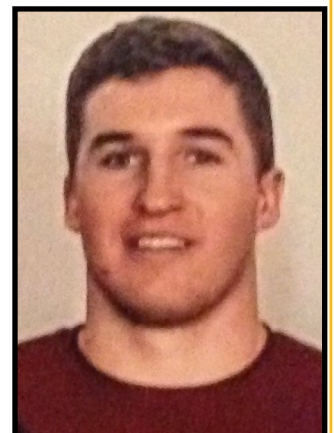


Advice from a current student — Giles Fox

As a mathematics and physics dual major, the first thing you learn is self-discipline. This includes setting a weekly routine of taking lecture notes, working intently on homework problems, and inquiring with professors during office hours. Your professors are your greatest resource. Ask them, listen to them, and learn from them. While, at times, I am sure the professors found me a bit of a nuisance, they were always gracious and never hesitated to help. Also, if you hope to achieve respectable grades, near-perfect attendance is not just a recommendation, it is an *obligation*.

To most this may not sound like fun, but if you truly find math and physics intellectually stimulating, a completely new world will be opened to you. In math, you will observe the far-reaching beauty of structure and the mind-blowing consequences of theorem. In physics, you will experimentally test the physical laws of the universe and discover the astonishing explanations to some of the biggest questions in the history of science. Both fields, I assure you, will quench your thirst for scientific knowledge.

Finally, I would urge anyone entering a scientific field, like math or physics, to come in with a sense of humility, because sooner or later science will humble you. This, I credit to Albert Einstein, who said “The more I learn, the more I realize how much I don’t know.”



Giles Fox is a senior math and physics student from Ashland, KS

KAMS Research

by Keith Dreiling

One of the graduation requirements for students in the Kansas Academy of Mathematics and Science (KAMS) program is to conduct undergraduate research. Many students choose research in biology, chemistry, or physics, but gradually the Mathematics Department has gained students interested in engaging in mathematics research. Currently there are twelve KAMS students working with our faculty on various mathematics topics.

Three students who are interested in actuarial science are looking for trends in insurance (automobile, flood, etc.) data. They are modeling the data and using extrapolation methods to predict premiums that should be charged by insurance companies. The students are working under the guidance of Dr. Weber.

One student under Dr. Riazzi's direction is exploring Fibonacci numbers, and another student is investigating irrational integrals.

Dr. Young is working with two students who volunteered to work with the FHSU Athletic Department on sports analytics. Sports analytics involves the use of historical data to help decision makers in providing their team with a competitive advantage. The students are currently analyzing football data.

Five students are working on various geometry topics with Dr. Dreiling. After a few weeks of reviewing paper-and-pencil constructions, the students learned construction methods in Geometer's Sketchpad. They each chose a topic and are using Geometer's Sketchpad to investigate the topic and make and prove conjectures related to the topic.

Joan Dreiling chosen to attend the Lindau Meeting of Nobel Laureates

Dreiling is a National Research Council post-doctoral fellow at the National Institute of Standards and Technology in Gaithersburg, Md. She was chosen to attend the Lindau Meeting of Nobel Laureates and also invited to present her research at technical physics conferences in both the U.S. and Europe.

Dreiling graduated summa cum laude from FHSU in 2008 with bachelor's of science degrees in physics and mathematics. She was also the Torch Award winner in her class.

She earned her Ph.D. in experimental atomic, molecular and optical physics at the University of Nebraska, Lincoln. Her dissertation, "Asymmetric Interaction between Spin-Polarized Electrons," won the Folsom Distinguished Doctoral Dissertation Award.



MATH & CS Faculty Assist with Science Olympiad

Science Olympiad is a national, non-profit organization dedicated to improving the quality of K-12 science education through participation in Science Olympiad Tournaments and incorporation of the Science Olympiad into classroom curriculum.

Science Olympiad competitions are like track meets, consisting of 23 individual and team events. Each year, events are updated to reflect the ever-changing nature of biology, earth science, chemistry, physics, computers, astronomy, engineering, and technology. By combining events from all disciplines, Science Olympiad encourages a wide cross-section of students to participate.

Students who participate in Science Olympiad are taught advanced science through active, hands-on participation. All events involve team work, group planning, and cooperation. There are now over 5,500 middle schools and high schools from all 50 states who participate in Science Olympiad.

The Departments of Mathematics and Computer Science at Fort Hays State University have been actively involved in coordinating, organizing, and judging events for the past several years. Faculty members who assisted with the 2017 FHSU Regional Competition on February 7 and 9 were: Bader Abukodair and Jeff Sadler – Mission Possible, Soumya Bhoumik and Sarbari Mitra – Write It Do It, and Hongbiao Zeng and Jeff Solheim – Game On.



Mathematical Fitness Camp

FHSU Math Camp 2016 took 3 faculty members, 5 Noyce Summer Scholars and 14 students to the *Olympics*. This year's topic was fitness and math! Open to area 5th through 7th graders, the camp ran from 9:00-noon, June 13-16. Math Department faculty Dr. Lanee Young, Dr. Keith Dreiling and Judy Brummer, along with the Noyce Scholars, presented the camp. The camp was held in Rarick Hall, but also included a field trip to Cunningham Hall for a mathematical workout with Kelsey Billinger from the Tiger Wellness Center.

Working in groups of 3 or 4, concepts such as proportions, rate conversions, slope, and linear and quadratic equations were discussed. These concepts were related to topics including nutrition, optimal heart rate, potential growth and the ability to jump. Each group designed a team flag and at the end of each day, the groups competed in fun Olympic style events: javelin (paper airplane), shot put (water balloon), jumping rope and vertical jump.



The camp was not only a learning experience for the campers, but also for those that help with the camp. The Noyce Scholars gain valuable experience working directly with the campers, planning activities and reflecting on the day's lessons.



Departmental Update: This summer Dr. Mohammad Riazi will turn the reins of the department over to Dr. Keith Dreiling. Dr. Riazi plans to return to teaching full time and Dr. Dreiling will assume the duties of department chair on June 16, 2017. Check back in spring 2018 for more information.

MATH RELAYS 2016 by Bill Weber

Last November, the FHSU Math Department hosted the 38th Annual Math Relays. We hosted 681 students from 53 schools on that day, and had a very successful day.

In class 1A, the team champions were St. John's Catholic, followed by Rock Hills and Tipton Catholic. In the 2A/3A category, Republic County won top honors, with Hill City just $\frac{1}{2}$ point behind, with Trinity Catholic 3rd. Within the 4A-6A category, McPherson was the winner, with Salina Central and Hays High also placing in the top three. 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. 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 which exist.

The 39th Math Relays will be held on Thursday, November 9, 2017. We look forward to another fun day of hosting the best and brightest math students from our area on the FHSU campus!

FHSU NSF Noyce Grant Comes to a Close...or Does It?

Over the past five years, FHSU has had the opportunity to grant 24 scholarships to math education majors totaling nearly \$300,000 through the NSF Noyce Program, which is a program aimed at recruiting the most talented math and science students to become teachers after graduation. These scholarships included additional funds for students to enroll in seminar courses dealing with issues in teaching within rural schools, attend a rural field experience, as well as support for travel to state, regional, and national math conferences. Our five year grant cycle was scheduled to end after this academic year, but we are currently in the process of applying for a supplemental grant which would provide some additional funds along with another year of awards to STEM education majors. Then, over this summer, we will apply for another five year award to begin in Fall 2018. If all goes well, we could be helping support FHSU math education majors for a total of 11 years!

This year five math education majors were awarded funds from the NSF grant. Thomas Broxterman (Hoyt senior via Allen CCC), Nicole Fischer (Leoti senior via Wichita St), Elle Stein (Spearville senior via Pratt CC), Brianna Wooldridge (Hays senior), and Chelsea Zimmerman (Hays senior) were the 2016-17 awardees. All are pursuing the teaching concentration, and upon completion of their undergraduate degrees, have agreed to teach math for two years in a high-needs district as their form of “repayment” to the NSF. All are progressing through their coursework, and we look forward to their graduation, so that we will have even more excellent new math teachers in the field!

Of all the math education majors who have been supported through this grant, six of them are currently teaching, three are student teaching, one completed student teaching in December but has not found that “perfect job” yet, and three are current students finishing their coursework. The grant has really helped us in recruiting, especially from community colleges, as FHSU has more than doubled the number of STEM education majors in our programs over the past four years, in comparison to the previous four years.

Although our current Noyce grant is in the final stages, we are hopeful for further funding, but even if not awarded, there are many great grant and loan forgiveness programs out there for STEM education majors. If you know of any students who might be excellent future math or science teachers, please contact Bill Weber (bweber@fhsu.edu).... he'd be happy to visit with them about these (and other) scholarship opportunities!

2016 Faculty Scholarly Activities (when they aren't teaching)

The Mathematics Faculty are actively involved in original research, publication, problem solving and proposing. The following is a partial list of scholarly activities by the faculty in 2016.

- ∞ Several faculty worked with KAMS students on research projects.
- ∞ Various presentations by faculty at the weekly seminar.
- ∞ Presentations at the Kansas Section of Mathematics Association of America, Hays, KS April 2016.
- ∞ Attended and Presented at Middle School Gifted Conference in Oakley, KS. Spring 2016.
- ∞ Various presentations at Kansas Association of Teachers of Mathematics Conference, Maize KS October 2016.
- ∞ Presented “Improving Online student’s Learning in Statistics Using Curricular Supports” at RCML national conference.
- ∞ Developed new assessments and led team in data retreat sessions for CAEP Accreditation
- ∞ Submitted grant application for a new 5 year grant to NSF Noyce Scholarship Program
- ∞ 2016 International Research: Innovation and Leadership in Education Book of Proceedings.
- ∞ Trisecting an Angle Using Mechanical Means. *Convergence*. Mathematical Association of America.
- ∞ Presented “Using Modeling to Teach Math and Science,” NCTM, Phoenix. 2016.
- ∞ Coordinate MACS Problem Solving Sessions
- ∞ Toy Pigs Teach Statistics. *Mathematics Teaching in the Middle School*. September 2016
- ∞ On k-Graceful Labeling of pendant edge extension of complete bipartite Graph” *Algebra and Discrete Mathematics*,
- ∞ “On Graceful Labeling of 1-Crown for Complete Bipartite Graph” *International Journal of Computational and Applied Mathematics*
- ∞ Developed course structure and materials for the department’s new MATH 180 Concepts of Elementary Mathematics
- ∞ Attended “Great Plain Combinatorics Conference Workshop”, University of Kansas, 2016. Numerous articles and publications on Graceful Labeling



THANK YOU FOR YOUR SUPPORT

The Department of Mathematics 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 as recipient. We also appreciate the employers who matched your contributions.

Patrick and Keri Applequist, Gary and Bernice Bell, Elton and Wendy Beougher, Charles and Charlotte Bigler, Duane Blaesi, Rex and Beverly Blanding, Jerry and Edith Bollig, Susan Bozeman, Jerry and Michelle Bremenkamp, Darren Brungardt, Robert and Nancy Chaffin, Kent and Lisa Colwell, Willis and Alma Crabtree, Craig and Anita Curtis, Thomas and Emily Decker, David and Theresa Dilley, Mary Dinkel, Scott Claassen and Francine Dreiling, Keith and Pam Dreiling, Kay and Mildred Dundas, Dennis and Diana Echard, Ken Eichman, Dan and Martha Eining, LeAnn Eitze, Richard and Amelia Franke, Leslie and Karen Freeman, Stan and Neva Griffin, Bret and Teresa Hartman, Al and Marilyn Herren, Tom and Francine Hestermann, Jerrod and Jess Hofaker, Kent Huffman, Rodney and Karen Hunley, Roger and Teresa James, Justin and Amy Johnson, Loyal and Wanda Johnson, Regina Johnson, Brad Kearn, Mary Keith Vernon and Virginia Kisner, Richard and Sandra Kratzer, Mike and Carmen LaBarge, Darrell and Sheila Latham, Larry and Donna Leitner, Don and Linda Lesovsky, Aaron Lessor, Dee Lessor, Max and Thelma Liggett, Thomas Lonnon, Paul and Pat Luea, Jim and Shirley Malcolm, Reza Marefat, Dan and Pamela May, Mike and Jeanie Michaelis, Merrill Milham, Regina Miller, Ronald and Debbie Miller, Bob and Anel Minneman, Donald Molleker, Wayne and Alberta Neel, Sylvia Nelson, Curtis and Karen Pahl, Dennis and Karen Pauls, Geoffrey Peter, James and Sharla Pfeifer, Robert Plomondon, Larry and Darlene Plymell, Jason and Rachel Purdy, Mohammad and Seddigheh Riazi-Kermani, Eugenia Richards, Richard and Sharon Ruder, Ron and Cathy Sandstrom, Robert and Christine Sauber, Roger Schuster, Dennis and Gaylene Shank, Gail Stanley, Sue Ellen Stenger, David and Betty Taylor, Jon and Carrie Tholstrup, Blake and Crystal Vacura, Charles and Reta Votaw, Christina Wark, Bill and Tiffany Weber, Don and Mary Ann Werner, Doug and Shelley Whisler, Joe and Sandra Whitley, Rex and Margaret Wilson, Marilynn Wilson, Gary and Mary Wingfield, Leroy and Sharon Winklepleck, Lori Wittrock, Hongbiao and Michelle Zeng

Apologies are extended if someone's name was inadvertently let off the list. We appreciate each and every donation received! These contributions are so important in allowing us to attract and retain mathematics majors; which then gives these students the opportunity to become successful citizens such as yourself. If you know of any potential mathematics majors, please let us know by sending us their names. Thank you Merrill E. Milham, ('60) for your generous donation for the Toalson, Etter and Marshall Scholarships!!!

ALUMNI UPDATES

Don Molleker ('80) retired from teaching . He has four kids (3 boys and a girl). The oldest just graduated with a degree in physics from FHSU and a degree in mechanical engineering from K-State. The next one will graduate from K-State with a degree in mechanical engineering in the fall of 2018. The third one just graduated from high school and will be attending Butler Community College. The girl will be a junior in high school next year and is the athlete of the family. He was teaching math, physics, engineering and robotics this past year. He plans to travel more with his wife Robyn even though everyone in the family has given him more jobs since retirement.

Jason Purdy ('95) received a promotion at Cessna where he is a Structural Integrity Manager and FAA Structures Delegate at Textron Aviation.

Shelby Smith ('13) is a Senior Controls Programmer at KASA Industrial Controls in Salina, KS.

If you have updates you would like to share with your friends, please send an email to lyoung@fhsu.edu



Check out all that PIE!!! Dr. Zeng made his famous bacon pie.

Retired Faculty News

Mary Kay Schippers

Well. Another busy year of travel. With one son and family in Phoenix, and the other son and family in Rapid City, a lot of our travel involves seeing family. The one good thing about having to travel to see grandchildren is we have a great place to visit in the heat of summer and a great place to visit during the coldest winter days. I'll let you figure out which one we see, and when.

We also took two big trips to celebrate our 40th anniversary, and Danny and I turning sixty. Over the 4th of July, we met our children and grandchildren in Bar Harbor, Maine. My goal for the trip was to eat so much lobster that I would leave Bar Harbor saying, "Lobster? No thanks. I've had enough." Mission accomplished!

Then during the last two weeks of September, Danny and I toured England, Ireland and Wales with two very dear, life-long friends. We quickly learned the ABC's of touring the U.K. (Another Bloody Castle?!) But not to worry, there were at least two pubs for every castle.

Back on the home front, I sew, write, ride, garden, and volunteer at various places. Not much thumb-twiddling. And I still think of you all often!

Elton Beougher

I will take this opportunity to inform you of a new book I received as a Christmas gift. It is an excellent source and makes for interesting and informative reading. Don't let the title scare you. It is easy reading and would be enjoyable reading for those of you who have an interest in science as I do. When I did my mathematics major, back in the dark ages (BS in 1961), we had to complete a number of allied courses in science. I chose Physics, Chemistry, and Biology since those would expand my employability as a high school teacher. In fact, my first teaching position was as THE mathematics and general science teacher in a 7-12 situation. I was the department of mathematics and $\frac{3}{4}$ of the science department! I don't regret taking all of that science because I enjoyed the experience and challenge of it. Well, enough of the digression. Now to the subject at hand.

The book of which I am extolling the virtues is [Welcome to the Universe](#). The authors are Neil DeGrasse Tyson, Michael A. Strauss, and J. Richard Gott. You may have heard of Tyson. He has been the star of several popular television shows, including the recent new version of "Cosmos." If you have seen these, you will recall his folksy and amusing delivery of the narrative. This comes through very clearly in the book I am reviewing. The three authors developed this book from the lectures given in an astronomy course they team taught at Princeton. The course was designed for non-science majors. The blurb describing the book in the online iBooks store states "this book covers it all -- from planets, stars, and galaxies to black holes, worm holes, and time travel." Don't let this description scare you off! It reads very easily and the level of mathematics is well in the range of high school Algebra II. In fact, you could probably read it profitably and enjoy the journey without digging through any of the mathematical development. The engaging style of Tyson, seen in his television series, comes through in his writing. The authors take turns presenting individual chapters of the book. Tyson's chapters very obviously reflect his style. The other two authors write well but they do not demonstrate the knack for discussing material as he does.

The Big Bang, $E = mc^2$, black holes, and the expanding universe are among the many subjects included. How such theories were developed is discussed in easily understood non-technical language. How these theories were justified and supported by subsequent developments and investigations is a strength of this book. A sub-title for the book might well be "The Scientific Method and the Advancement of Knowledge."

A disclaimer: I do not receive any remuneration from sales of this book ;0). I enjoyed it and hope you do also.

Charles Votaw

Another year and all I am ready to brag about are my grandchildren. One is now an officer in the Air Force reserve and another has the top enlisted rank in the Army and is a liaison officer dealing with the Senate. Otherwise, I still read, mess around on the computer and watch movies on TV. I suppose it's also noteworthy that I can still cook a meal when the occasion arises, wash clothes and bathe myself.

Ron Sandstrom

It's too much like winter out today so I'll write some notes. I really need to be outside taking care of our 30 plus trees after the January ice-storm. We lost lots of limbs and electricity for a day. Fortunately, we were in Kauai, Hawaii that week. It took Cathy about 5 seconds to decide that spending a week in Hawaii was a pretty good Christmas present. Beside spending most of my time outside, I'm still substituting, any subject, about 2 days a week either here or over at Otis-Bison. I don't do elementary. I'm still volunteering as an accountant for two local organizations and work at our Museums about once a week. Cathy usually works two days a week at the museums. So, we do lunch together and do spend some time together. Our museums are only open Memorial Day through Labor Day. The complex consists of the following buildings: Barbed Wire, Depot, Limestone, Bank, and now a one room school house. The kids: Jessica's daughter Bailey is on the Hutchinson High dance team so we make many trips to games in Hutchinson. Jessica teaches Spanish at Hutch High and her spouse Ryan does the on-line portion of the Hutch News. Erik, now an ER Doc, is in Havre, Montana. Bryna works in HR at the Hospital. Mason graduates high school this year and is planning on attending Northern Montana. They have the industrial tech stuff he wants. Carson, 6th grade and is taller than Cathy, is making waves in swimming and scouting. We made three trips there; two by car (20 hours one way) and I flew one. Erik and I put a new kitchen in their house. In July, his oldest Jackson, who is in Army Airborne, got married in Manti, Utah. So, we took our trailer out and made our way on to Oregon to follow the Columbia River and the Lewis and Clark trail. I was a little disappointed in the Lewis and Clark stuff, but as one historian said after they crossed the continental divide it was anti climatic. I also wanted to see the hydro-electric dams along the Columbia river and what surprised me was the number of wind turbines on the Washington State side. Cathy stays busy with a prayer shawl ministry; she has distributed hundreds of shawls all over the US. Whether we are in Kansas, Colorado, Utah, Oregon, Wyoming, Montana, or Hawaii; she always seems to find people with whom to share her gift. This is about as much as pithy Ron can or is willing to contribute this year.

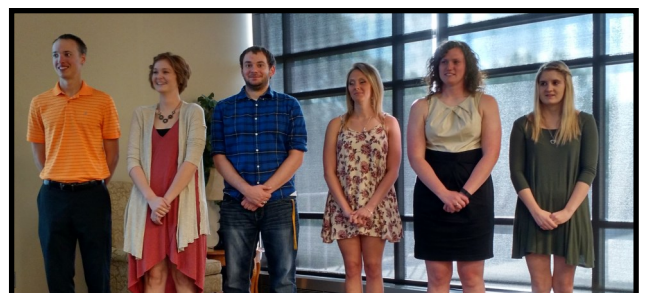
Ellen Veed

Life continues to be good but not very exciting. I spent last summer at my Colorado cabin (11000 ft). It is great in the summer but some of my hardier cabin neighbors have been telling of their recent trips which involve 5 to 7 miles of snowmobile or snowshoe treks after driving as far as they can. The county no longer plows the county road. I will probably go out the middle of June when the drifts are gone.

In the meantime I'm off to Arizona to spend most of March in Tucson. I'll stop in Las Cruces, New Mexico to pick up Carolyn Ehr. I like to go to the Tucson Book Festival and the Desert Museum and visit friends down there.

Rosalie Nichols

We had another busy year with travels for three graduations of grandchildren and attending Scottish events for Weeden's Clan McLeod responsibilities. Carolyn Ehr lives in the next building and we see her daily.



2016 KME Initiates: Thomas Broxterman, Nicole Fischer, Christian Meulli, Briana Woodridge, Elle Stein, Chelsea Zimmerman. Thank you to the retired faculty for the support of FHSU MATH Scholarships.

Scholarship News — 2016-2017 by Jeff Sadler

Though the percentage of regent university expenses covered by state funding in Kansas continues to drop, the Mathematics Department continues to award substantial financial scholarship funds to many pursuing a mathematics degree at FHSU to offset much of the increased tuition cost that occurs with decreased state funding. Donated monies by friends of the Mathematics Department and by other sources provided \$96,600 in student scholarships during this past year. The scholarship dollars awarded to twenty-six students significantly offset their cost of extended education.

The 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 be extremely impactful scholarships for many mathematics majors. Although the Noyce Scholarship program is nearing the end of its funding, a new application for future funding is being developed and submitted. In the 2016-2017 year, the following students, these students received over \$72,000 in scholarship dollars:

Thomas Broxterman (Hoyt)—\$13,000 Noyce Scholarship

Brianna Wooldridge (Hays)—\$13,000 Noyce Scholarship

Elaina Haberer (Luray)—\$6,500 Noyce Scholarship

Nicole Fischer (Leoti)—\$13,000 Noyce Scholarship

Elle Stein (Spearville)—\$13,000 Noyce Scholarship

Chelsea Zimmerman (Hays)—\$13,000 Noyce Scholarship

Clay Kear (Colwich)—\$2,000 SEMI-Steffen Scholarship

During this past year, twenty-three students working on a major or a minor in mathematics were awarded \$21,900 through both prestigious named-scholarships and departmental scholarships. These scholarships are funded through both endowed funds and other designated contributions, some pledged during the annual Tiger Call Telethon. The following FHSU students received both high recognition and significant scholarship dollars:

Will Pingsterhaus (Cimarron)—\$3,000 Scholarship

Chelsea Zimmerman (Hays)—awarded the O.E. and P. Etter \$600 Scholarship

Brianna Wooldridge (Hays)—Moore Family \$1,000 Scholarship

Elle Stein (Spearville)—Moore Family \$1,000 Scholarship

Elaina Haberer (Luray)—awarded the E.E. and L. Colyer Memorial \$600 Scholarship

Kellen Griffin (Hays)—Denio \$1,500 Scholarship

Fernando Guzman (Hays)—Schippers Family \$1,000 Scholarship

Lakin Werth (Hays)—Dr. Carolyn Ehr \$1,200 Scholarship

Thomas Broxterman (Hoyt)—E. Eltze Memorial \$600 Scholarship

Clay Kear (Colwich)—Baxter \$1,000 Scholarship

Kevin Jones (Cleveland, TN)—Ruth and Roger Pruitt \$1,000 Scholarship

Nicole Fischer (Leoti)—awarded the Tebo Family \$600 Scholarship

Nicole Maurer (Udall)-awarded the Veed \$800 Scholarship

Lance Hulse (Marquette)—Ron and Cathy Sandstrom \$1000 Scholarship

Christian Meuli (Enterprise)—Marshall \$800 Scholarship

Samuel DeVore (Lyons)—Toalson \$1,200 Scholarship

Alexandra Keehn (Clay Center)-awarded the C.W. Lowry \$1,000 Scholarship

Lydia Bender (Topeka)- awarded the P. Miller Math/Physics \$1,000 Scholarship

Using telethon supporters' contributions, the Mathematics Department awarded the following \$600 departmental scholarships:

Trinh (Ivy) Le (Liberal)

Kenton Lindsey (Goddard)

Alexandria Thulin (Holdrege, NE)

Spencer Roy (Minneapolis)

Jason Babyak (Hays)

The Academic Opportunity Award (AOA) Scholarship in Mathematics recognizes incoming freshmen to FHSU. Now in its tenth year, this category of scholarship provides a two-tier structure with award amounts of either \$900 or \$500. The award and amount is based upon a student's interest in pursuing a degree within mathematics as well as upon the student's high school academic achievement and ACT/SAT scores. This past year, ten AOA scholarships worth \$8,200 were offered to students interested in beginning a degree program in mathematics. From this group of prospective students, three began classes in Fall 2016 for a total of \$2,700 in scholarships. Those students included:

Fernando Guzman (Hays)

Diana Sabados (Brighton, CO)

Justyce Briney (Hays)

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 at FHSU. But we are in need of assistance from friends and alums to reach this goal. Please 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 are truly appreciative of any financial assistance received through the contributions made by friends of the Mathematics Department. If you have questions about departmental scholarships or have the ability to assist in identifying and/or recruiting possible mathematics 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 Mathematics Department payable to the FHSU Endowment Association—specify the mathematics scholarship fund of interest on the memo line.



Back Row: Christian Meuli, Jason Babyak, Kellen Griffin, Kevin Jones, Will Pingsterhaus, Nicole Fischer, Dani Nay, Elle Stein, Sam Devore.
Front Row: Brianna Woodridge, Clay Kear, Lance Huser, Kenton Lindsey, Nicole Mauer, Alex Keene, Ivy Lee, Chelsea Zimmerman