Department of Mathematics
and Statistics Newsletter

Contents

Letter from the Chair, Graduate Program .............. 1

Undergraduate Program, Student Awards .............. 2

Data Science Program, Undergraduate Highlights .... 3

REU, Graduate Students .................................. 4

Graduate Students (cont’d), Math Fun .................... 5

Brief News, Events ........................................ 6

Thomas Brown, Math/Stat Club .......................... 7

Alumni News .............................................. 8
Dear Alumni, Retired Faculty, Students and Friends,

My name is Zhuan (John) Ye. I joined the department from Northern Illinois University on July 1, 2016. Since then, I have enjoyed working with my new colleagues at UNCW. I would also like to take this opportunity to send my warmest greetings to you via this re-activated departmental newsletter.

The department has gone through many personnel changes since my arrival. Dr. Kenneth Gurganus has entered phase retirement in Fall 2016 and Dr. Subramanyam Kasala retired in January 2017. We now have 25 full-time faculty, 2 administrative assistants, and are currently engaged in searches to add two mathematicians, two statisticians, and one data scientist to our faculty in Fall 2018. Dr. Russell Herman is Assistant Chair/Undergraduate Coordinator and Dr. Wei Feng is Graduate Coordinator. Jointly with the Department of Computer Science, we launched a Professional Master’s Program in Data Science this Fall 2017 with 17 students. Dr. Mark Lammers is serving as the first coordinator of this program. Currently, we are planning to create an actuarial certificate program and an international 3+1 program. There are approximately 140 majors in our undergraduate programs of mathematics and statistics, and 19 graduate students in our Master’s program of mathematics.

The department is now located in the newly renovated Osprey Hall (formerly the Social and Behavioral Science Building). Our faculty and students are really enjoying the space and facilities, including the technology classrooms, applied learning labs, and student study areas. Our faculty members are fully committed to excellence in teaching, research and service. Many faculty members obtained patents and external grants such as NSF and NOAA grants, and received various awards in teaching and service. Our students are also heavily engaged in classroom’s learning, research and internships. Our students have presented research posters in every CSURF UNCW Showcase of Student Research and Creativity, covering a very broad range of topics in pure and applied mathematics, statistics, and data mining.

The department would like to thank all of the alumni, friends, and retired faculty who have contributed to our trust fund and scholarship funds. Your generous donations have helped us considerably in supporting student activities and recognizing student achievements. Please be my guest if you are on the campus. Keep in touch.

Greetings from the Chair

Dr. Zhuan Ye

Graduate Program

This Fall 2017, our Master’s program in mathematics has an increased enrollment of 19 students, 8 continuing students, and 11 newly admitted students. This group of highly motivated and talented students come from North Carolina, as well as other states and overseas, with diversified interests in pure and applied mathematics, operations research, bio-statistics, and data analytics. The 5-year Master’s/Bachelor’s program is running well with 13 undergraduate students currently enrolled. Our current and potential graduate students are actively involved in research collaborations with faculty members, presenting their research and applied learning results at professional conferences, the UNCW CSURF Showcases, and publishing joint research articles. Many of our Master’s students are going through a training program within the department to become instructors in lower-level mathematics and statistics courses. Several other students also hold internship positions at local industry and other UNCW units. The curriculum and study plan in our Master’s program is designed to provide strength and flexibility for various career goals: further graduate study, college teaching, and employment in industry or government.

Dr. Wei Feng,
Graduate Coordinator
Undergraduate Program

The Department of Mathematics and Statistics offers degree programs leading to a B.A. in Mathematics, a B.S. in Mathematics, and a B.S. in Statistics with mathematics concentrations in teacher education, applied mathematics, and operations research. At the end of the Spring semester, we had 106 declared majors in mathematics and 52 in statistics. We graduated 27 undergraduates in the Spring. In this group there were 19 B.S. (9 MAT, 10 in STT), 14 B.A. (14 MAT) with double majors in economics, psychology, elementary education, and physics and minors in Spanish, French, biology, psychology, chemistry, Recreation, and Sport Leadership & Tourism. We had an amazing group of students with 11 graduating with distinction (Cum Laude, Magna, or Summa Cum Laude) and 7 graduating with Honors in Mathematics, Statistics, or Economics.

Students have been engaged in and out of the classroom, participating in honors research, internships, and contributing to the department as a whole. Every year we recognize our student accomplishments in their course work and research.

This year we inducted 11 students into Pi Mu Epsilon, the honorary national society for mathematics. Its purpose is to promote and recognize student mathematics scholarship.

Dr. Russ Herman
Undergraduate Coordinator

Pi Mu Epsilon Inductees
Michael Byrd, Christine Craib, Elisa Marchione, Patrick Regan, Nella Chamblee, Genevieve Donahue Benjamin Lewis, Caroline Werther, Jessica Cook Elizabeth Eakin, and Virginia Martin

Student Awards

The following student awards were presented at graduation in May:
The Adrian Hurst Mathematics Scholarship
Caroline Elizabeth Werther
The A. Carl Nelson Scholarship
Thomas Richard Billman
The Douglas D. Smith Scholarship in Mathematics & Statistics
Virginia Leigh Martin
The Gene T. and Elizabeth J. Fales Scholarship
Michael Charlton Richard Byrd
The Thad Dankel Mathematics Endowed Scholarship
Christine Marie Craib
The Fred Toney, Jr. Memorial Scholarship
Allyson Rachel Lineberry

Outstanding Scholars
Joshua D. Toma, Elizabeth Huse, Morgan E. Dozier, and Alexandria R. Dempsey

Recognition for Excellence in Service
Christine Marie Craib was recognized for her service in the department and as President of the Mathematics and Statistics Club.

Spring 2017 Student Poster Awards

1st Place: Trinity White
Modeling Mathematics in Art
2nd Place: Jessica Cook, Hanna Azizi, Nicklas Karras
Classification of Student Critical Reflection Using Text and Data Mining
3rd Place: Christine Craib
Analysis and Simulation on a Discrete-Time Model of Smoking Behavior
Honorable Mention: Thomas Billman and Caroline Werther
Actuarial Survival Models
The inaugural cohort of students starting in the new Masters of Science degree in Data Science has begun the program this Fall 2017 semester. There are 17 students in the first cohort with a diverse set of undergraduate majors including Physics, Environmental Studies, Psychology, Chemistry, Economics, Business Administration, Computer Science, Statistics and Mathematics. The local and regional business community has been enthusiastically involved in planning the program. Representatives from General Electric, PPD, Live Oak Bank, SAS, Trillium, ATMC and others participated in our first Advisory Board meeting in May. They made numerous suggestions on the curriculum and expressed their desire to get hands on interaction with the students in the program in their first semester. We look forward to an exciting year!

Dr. Mark Lammers
Data Science Coordinator

Undergraduate Student Highlights-Christine Craib

Christine Craib graduated with a B.S. in Mathematics with University Honors in Mathematics. She defended her honors thesis under Dr. Wei Feng in December, 2016, entitled *A Mathematical Analysis on the Transmission Dynamics of Neisseria gonorrhoeae*, which recently was accepted by The North Carolina Journal of Mathematics and Statistics for publication.

Christine has made her mark on many students and faculty in the department. She has served three years as an officer in the Mathematics and Statistics Club, having been its president in her last year as an undergraduate. She was responsible for encouraging students to participate in a variety of activities, such as attending several conferences throughout the year, including trips to regional conferences in mathematics in Greensboro, NC, Macon, GA, the AIMS conference in Orlando, FL, and the national MAA Mathfest conference in Chicago.

She has received many honors, including the Board of Visitors Research Fellowship (a research grant), the Walt and Susan Patterson Distinguished Presentation Award at the MAA-SE Regional Conference, and recognition as a Distinguished Undergraduate Research Scholar at UNCW. She also received from the Department of Mathematics and Statistics the Recognition for Excellence in Service, was inducted into Pi Mu Epsilon, was awarded the Thad Dankel Mathematics Endowed Scholarship, and received departmental poster awards two semesters in a row for her entries in the CSURF Showcase of Student Research and Creativity.

Christine recently graduated Summa Cum Laude with University Honors as one of our youngest graduates only to stay on in the Five-Year B.S/M.S. Program. Christine plans to continue her research as she finishes a master’s degree in Spring 2018. She plans to complete another thesis, finish up her course work, and teach College algebra classes. Her hopes are to eventually pursue a Ph.D. in mathematics.
Gregory Johnson graduated from UNCW in Spring 2015 with a B.S. in Physics and a minor in mathematics. He was headed towards a second degree in engineering, but opted to enroll in our master’s program in mathematics. Gregory has very broad interests from hands-on physics projects to pure mathematics to theoretical physics – teaching college algebra, tutoring in physics, and setting up labs for the 2+2 pre-engineering program at UNCW. Gregory participated in the Math Jeopardy contest at the 2015 MAA-SE (Southeast section of the Mathematical Association of America) meeting at UNCW. His team placed fourth in the competition. He was awarded the Schmid Award which is given annually to a graduating senior with a B.S., who, shows great potential for contributing to the fields of theoretical or applied physics. Gregory worked with Dr. Russ Herman to complete his thesis titled, Geometric Approaches to the Characterization of Qubits and Entanglement. This involves the study of the quantum analog to a bit, which is used in quantum computers. His study is an abstract geometric study of the mathematics behind how spin states can be viewed from a geometric viewpoint. Gregory plans to obtain a Ph. D. in physics and was accepted to enter N.C. State’s Ph.D. program in physics.

Samuel T. Pickett was born in Germany before moving to the United States at the age of three. Throughout his childhood he lived in coastal North Carolina and spent his summers with his father in southern California. Samuel started his continuing education at Cape Fear Community College when he was well into his thirties, often times making him the oldest person in his class. After graduation from CFCC, Samuel went on to earn his B.A. in mathematics and his M.S. in mathematics from the University of North Carolina at Wilmington. During his masters work at UNCW Samuel taught College Algebra, achieving his life-long desire to teach. Samuel completed his thesis project, with the help and supervision of Dr. Michael Freeze. Samuel's thesis focused on the mathematics of color sensing, specifically using information theory to analyze the color sensing process. Samuel plans to continue his teaching career.

Dr. Tracy Chen and Yishi Wang received an NSF-DMS award to run a new NSF-REU Site: Interdisciplinary Integration in Statistical Learning and Data Mining at UNCW. This award is one of the very few REU programs in Statistics nationwide and will have remarkable impacts on future undergraduate and graduate student recruitments at UNCW. Products from this program will also benefit the department’s future curriculum and student research activities, and enrich their applied learning experiences. The primary objective of this research is to provide a diverse group of undergraduate students a complete research experience on deep data analytics methods, to develop team working and professional communication skills. A secondary objective is to generate new statistical knowledge in the areas of interdisciplinary integration of pattern recognition with advanced statistical learning and data mining techniques. These objectives will be achieved by integrating undergraduate students in collaborative teams with faculty mentors.

Drs. Tracy Chen and Yishi Wang received an NSF-DMS award to run a new NSF-REU Site: Interdisciplinary Integration in Statistical Learning and Data Mining at UNCW. This award is one of the very few REU programs in Statistics nationwide and will have remarkable impacts on future undergraduate and graduate student recruitments at UNCW. Products from this program will also benefit the department’s future curriculum and student research activities, and enrich their applied learning experiences. The primary objective of this research is to provide a diverse group of undergraduate students a complete research experience on deep data analytics methods, to develop team working and professional communication skills. A secondary objective is to generate new statistical knowledge in the areas of interdisciplinary integration of pattern recognition with advanced statistical learning and data mining techniques. These objectives will be achieved by integrating undergraduate students in collaborative teams with faculty mentors.

Dr. Tracy Chen
Associate Professor

Dr. Yishi Wang
Professor

Research Experience for Undergraduates

Graduate Students

Gregory Johnson

Gregory Johnson graduated from UNCW in Spring 2015 with a B.S. in Physics and a minor in mathematics. He was headed towards a second degree in engineering, but opted to enroll in our master’s program in mathematics. Gregory has very broad interests from hands-on physics projects to pure mathematics to theoretical physics – teaching college algebra, tutoring in physics, and setting up labs for the 2+2 pre-engineering program at UNCW. Gregory participated in the Math Jeopardy contest at the 2015 MAA-SE (Southeast section of the Mathematical Association of America) meeting at UNCW. His team placed fourth in the competition. He was awarded the Schmid Award which is given annually to a graduating senior with a B.S., who, shows great potential for contributing to the fields of theoretical or applied physics. Gregory worked with Dr. Russ Herman to complete his thesis titled, Geometric Approaches to the Characterization of Qubits and Entanglement. This involves the study of the quantum analog to a bit, which is used in quantum computers. His study is an abstract geometric study of the mathematics behind how spin states can be viewed from a geometric viewpoint. Gregory plans to obtain a Ph. D. in physics and was accepted to enter N.C. State’s Ph.D. program in physics.

Samuel T. Pickett

Samuel T. Pickett was born in Germany before moving to the United States at the age of three. Throughout his childhood he lived in coastal North Carolina and spent his summers with his father in southern California. Samuel started his continuing education at Cape Fear Community College when he was well into his thirties, often times making him the oldest person in his class. After graduation from CFCC, Samuel went on to earn his B.A. in mathematics and his M.S. in mathematics from the University of North Carolina at Wilmington. During his masters work at UNCW Samuel taught College Algebra, achieving his life-long desire to teach. Samuel completed his thesis project, with the help and supervision of Dr. Michael Freeze. Samuel's thesis focused on the mathematics of color sensing, specifically using information theory to analyze the color sensing process. Samuel plans to continue his teaching career.
Damien Wright did his undergraduate studies in mathematics, with a minor in Spanish, at Coastal Carolina University. Damien's research project at UNCW was in the area of representation theory of Lie algebras with Dr. Dijana Jakelic. He studied the action of the affine symmetric group on the associated weight lattice and he characterized certain special elements in the orbits of the action. Damien was accepted by several Ph.D. programs in mathematics. He chose to pursue his studies at Louisiana State University from where he received the 4-year Board of Regents Doctoral Fellowship.

Heather Buyu did her undergraduate studies in mathematics and computer science at Coker’s College, South Carolina. Her research project at UNCW was in the area of representation theory of Lie algebras with Dr. Dijana Jakelic. She studied finite and affine root systems, focusing on the affine Weyl groups in the context of infinite Coxeter groups. Heather was accepted by several Ph.D. programs in mathematics. She chose to pursue her further studies at Louisiana State University from where she was awarded full financial support.

Bryan Prescott James was born in Colorado and has lived all over the U.S. He got his B.S. in Physics from Southern Adventist University near Chattanooga, Tennessee. After coming to UNCW in Fall 2015, Bryan worked as a teaching assistant and taught college algebra classes. He received a 2016-2017 Graduate Teaching Assistant Award from the UNCW Graduate School. Bryan also completed his Master’s project under the supervision of Dr. Wei Feng. The project was on Difference Equation Models for Dynamical Breathing Disorders. After graduation Bryan plans to continue teaching mathematics at the college level, hopefully at UNCW or Coastal Carolina Community College in Jacksonville, NC. As his wife’s Navy medical career takes them around the globe, he will be committed to educating and helping students in math classes wherever they go.

Math Fun

- Suppose $y = \frac{x^4 - 6x^3 + 1}{4x^3 - 4x}$. Let $x = \tan \theta$. What is the simplest form for $y$?

- Find the centroid of the region bounded by the given curves.
  $$y = e^x, y = 0, x = 0$$

From left to right: Dr. Mark Lammers, Dr. Subramanyam Kasala, Dr. Zhuan Ye, Dr. Russ Herman
Dr. Subramanyam Kasala received his Ph.D. at Indian Statistical Institute, Calcutta, India, and was a faculty member at the University of Pittsburgh for several years. He came to UNCW as an Associate Professor of Statistics in 1989 and was promoted to the rank of Professor of Statistics in 1995. During his 27 ½ years at UNCW, Dr. Kasala has made substantial contributions to the theory of Statistics. He is the first one to prove that there is an exact and nonempty confidence region in multivariate calibration. This result was published in Annals of Statistics. He has published more than 30 research articles, book chapters and technical reports in theoretical and applied statistics, served as reviewers for professional journals and chaired sessions at national/international conferences. Many of his papers were published in top-tier research journals such as Annals of Statistics, Statistics & Probability Letters, Proceedings of American Statistical Association and Journal of Multivariate Analysis, as well as Handbook of Statistics and Lecture Notes.

Dr. Kasala was very devoted to classroom teaching and curriculum development in the field of statistics and was well-liked by his students. For many years, Dr. Kasala played the role as leading senior faculty in our statistics group, led the department’s efforts for several successful faculty hires, and served on Faculty Senate and many university committees.

All of his colleagues and students will miss Dr. Kasala very dearly, and remember his wisdom, kindness, calmness, friendly and positive attitude along with his significant contributions to the growth of statistics curriculum and programs at UNCW.

Faculty and Students are often engaged in events outside of the classroom such as the CAS 5K run, Conferences and CSURF Showcase.
Math/Stat Club

This year’s goal for the Mathematics and Statistics Club is to grow as a student organization while helping all members develop skills necessary to implement mathematics and statistics into their future careers. This year is full of exciting events such as: Math Jeopardy, a fun game show themed Math Competition; a Ping Pong Tournament; potlucks and picnics; and, various professional conferences. The latter are great opportunities to present personal research, view research from other students and professors, and create lifelong contacts in the field. We meet bi-monthly to plan future events, present opportunities available in the area, and share interest surrounding Math and Stats.

Math Jeopardy

In Spring 2017 UNCW entered a team of undergraduate students in the MAA Southeastern Section of Math Jeopardy. Teams of three or four undergraduates compete in a mathematical version of the well-known answer-and-question game. Troy Kling, former contestant in 2015, prepared our team, consisting of Michael Byrd, Christine Craib, Jessica Nadolski, and Tyler Wright. Our team made it to the second round. In the summer, Christine and Michael participated in the national Math Jeopardy at Mathfest, placing second in the contest.

In Memorium

Thomas Preston Brown, Sr., 94, died Monday, April 17, 2017. Mr. Brown served the students at UNC Wilmington as a Dean of Students and professor in the Department of Mathematics full-time from 1958 to 1987 and part-time until 2006. His contributions to mathematics students and to the general growth of the University were marked in part by his joining Pi Mu Epsilon while a faculty member and his service to the Order of Isaac Bear as a member and officer. For many years he was the mathematics education component of the department. When Tommy Brown retired, the department hired two Ph.D.’s in mathematics education to replace him. His remaining colleagues will miss him. A number of his colleagues were honorary pallbearers at his funeral.

Thomas P. Brown, Assistant Professor: A.B., M.A.

Mr. Thomas P. Brown
We wish to keep in touch and hear of the milestones in your lives. Please provide the information below so we can stay in touch. Also, find us in your social media, Linked-In, etc.

Name:   _____________________________________________________________________________

Dr./Mr./Ms. First  Middle  Maiden   Last  Suffix

Address: _____________________________________________________________________________

Street/PO Box    City    State   Zip Code

Phone: (____)______________________________________________ Email: _____________________

Employer __________________________  Position: __________________________________________

Street        City    State   Zip Code

Graduation Date(s): _________________ Degree(s)/Major(s) ___________________________________

Send your Alumni News by Email (MathStats@uncw.edu) or mail to Department of Mathematics and Statistics

Contact Information:
Chair: Dr. Zhuan Ye:  vez@uncw.edu or
Assistant Chair: Dr. R. L. Herman:  hermanr@uncw.edu

Department of Mathematics and Statistics,
UNC Wilmington, 601 South College Road, Wilmington, NC 28403-5970
MathStats@uncw.edu  Department Website:  http://www.uncw.edu/math/

We welcome your support!

Yes, I want to support the Department of Mathematics and Statistics at UNCW.

___Mathematics and Statistics Trust Fund (supports student awards, guest speakers and other needs)

___Academic Scholarships: ________________

___Other: __________________

Amount enclosed __________________ (Make check payable to UNCW)

You may also visit http://www.uncw.edu/giveonline to donate.

Send to: UNCW, Division for University Advancement, 601 South College Road Wilmington, NC 28403-5905

Thank you for your consideration and generosity!

Editors: Mr. Daniel McGhan, Dr. Russ Herman, Dr. Wei Feng