AUGUSTA UNIVERSITY

COLLEGE OF SCIENCE AND MATHEMATICS

Growth in the BS in Neuroscience
See article on page 10

Fall 2024

Biological Sciences | Chemistry and Biochemistry | Mathematics | Neuroscience | Physics and Biophysics

Dean's Office

Dr. John Sutherland, Dean
Dr. Thomas Crute, Associate Dean
Dr. Seth Oppenheimer, Associate Dean
Dr. Guido Verbeck, Associate Dean
Dr. Cliff Gardiner, Special Assistant to the Dean
Rita Patel, Business Operations
Sidhartha Wakade, Communications Strategist
Michelle Burns, Administrative Assistant
Janelle Mangrum, Program Manager

Contributors

Dr. John Sutherland, Dean
Dr. Thomas Crute
Dr. Cliff Gardiner
Sidhartha Wakade

Photography

Michael Holahan, Communications and Marketing
Sidhartha Wakade

Design

Sidhartha Wakade

Cover and Contents Page

Photos of The College of Science and Mathematics neuroscience labs,
Photos by Mike Holahan

Contents

Message From the Dean

The College of Science and Mathematics in 2024

For Augusta University and the College of Science and Mathematics, it has been a year like no other.

Enrollment surges of 2023 and 2024: Total enrollment at Augusta University increased by 6.7% in the fall of 2023 over the previous fall semester. The College covered our responsibilities in providing appropriate coursework for the new and returning students by asking — and paying — faculty to teach above their normal loads. Realizing this solution was neither desirable nor sustainable, the Provost created a Smart Growth Committee to recommend solutions. Dr. Tom Crute, Professor of Chemistry and Associate Dean for Faculty and Student Affairs, was a co-chair. The result was that in March the College of Science and Mathematics was awarded 19 new faculty and one new staff positions. While late in the recruiting cycle, chairs and departmental search committees were able to fill over half of the new positions. The new teaching-oriented faculty were critical in covering the course demands of another large increase in enrollment in the fall of 2024 — about 6% for undergraduates and 10% for the University as a whole. And the chairs and search committees are actively working to fill the remaining Smart Growth positions because another 6+% growth in undergraduates is predicted for the fall of 2025. As the result of Smart Growth and the Build the Bench program, introduced by President Russell Keen, we have been able to hire the new faculty and convert existing lecturers with terminal degrees to non-tenure-track assistant or associate professors, making it easier to hire the quality faculty that our students deserve.

A sad loss: Dr. Maria Eugenia Sabbatini succumbed to cancer this fall. Her story is one of success and overcoming challenges. Eugenia arrived as an assistant professor of biology just after consolidation and before the advent of start-up funding for research-oriented faculty. But with determination, grit, and excellent mentoring by Dr. Rich Griner, Chair of the Department of Biological Sciences, she established a research program that resulted in promotion to Associate Professor with Tenure in 2019 and to the rank of Professor in 2024. She was one of the first group of CSM faculty to be awarded a research grant from the National Institutes of Health. Her up-beat personality and exceptional dedication to teaching and research is missed by all her colleagues.

Other new faculty and searches: In addition to the Smart Growth hires, we welcomed five new tenure-track assistant professors this fall: one chemist, one mathematician, and three biological scientists. Of the latter, two are neuroscientists. They complement the two neuroscientists who joined us in the fall of 2023 and will support the undergraduate neuroscience program, which jumped to 78 majors this fall. Dr. Tom Colbert, who became the interim chair of the

Department of Physics and Biophysics when it became a separate department in July of 2023, became the regular chair after a national search. Dr. Richard Griner, long-time Chair of Biological Sciences, returned to the faculty in July. Dr. Amy Abdulovic-Cui is serving as Interim Chair and a national search is in progress. We are also searching for several new tenure-track assistant professors.

The College of Science and Mathematics on the Summerville Campus: Most College faculty moved to the Health Sciences Campus in 2021 with the opening of the new Science and Mathematics Building (GE). But about a quarter stayed on the Summerville Campus to support the field biology programs and provide courses for non-STEM majors. This past summer, all the CSM faculty on Summerville moved to Science Hall (SCI). Thanks to Smart Growth and President's Keen's Build the Bench initiative, the College can now supply full time administrative support for the College office, located on the second floor. In addition, six biology laboratories located in Science Hall (SCI) are scheduled to be upgraded to the same audio/visual standards as labs located on the Health Sciences Campus.

The Storm: Helene, the eighth named tropical storm of the 2024 Atlantic hurricane season, arrived in Augusta in the evening of Thursday, 26 September. The predicted track shifted eastward and the expected rainfall in Augusta increased all day. After hours of heavy rainfall, intense winds arrived early Friday morning, causing many large trees to topple over, exposing their roots. Many landed on cars and houses, and overhead utility lines were reduced to spaghetti. The Health Sciences Campus, the Summerville Campus and most commercial and residential neighborhoods lost power for a week or longer. Just after the storm, Augusta Utilities had to close the city water system because of debris clogging their intake. Augusta University was closed all the next week. We reopened on Monday, 7 October, with almost all the faculty, staff, and upper-division, graduate, and postdoctoral students in attendance. But it took another week for all the undergraduates to return. As I write this, now over seven weeks after the storm, more than a million cubic meters of debris, mostly fallen trees, have been carted away, but many streets still have sections that are effectively one-way because of debris stacked on curbs. The Health Sciences Campus was mostly unscathed, but the Summerville Campus lost several beautiful trees for which it is famous. Fortunately, there was little structural damage. In the aftermath of the storm, the College will monitor student performance in upper-division courses to evaluate and try to compensate for what students missed due to the disruption.

John Sutherland, PhD, Professor of Physics and Dean of the College of Science and Mathematics

Welcome to the College of Science and Mathematics!

CSM Would Like to Acknowledge and Welcome Our New Faculty and Staff

Jennifer Baltzegar, PhD
Assistant Professor
Biological Sciences

Julie Butler, PhD
Assistant Professor
Biological Sciences,
Neuroscience

John Duncan, EdD
Assistant Professor
Biological Sciences

Colin Miller Jr.
Lecturer
Biological Sciences

Jordan Moratin
Lecturer
Biological Sciences

Randy Singer, PhD
Assistant Professor
Biological Sciences

Beulah Smith
Lecturer
Biological Sciences

Stephen Tymanskyj, PhD
Assistant Professor
Biological Sciences,
Neuroscience

Breana Walton
Lecturer
Biological Sciences

Lindsey Davis, PhD
Associate Professor
Chemistry and Biochemistry

Thomas Moore, PhD
Assistant Professor
Chemistry and Biochemistry

Jorge Nochebuena, PhD
Assistant Professor
Chemistry and Biochemistry

Asanka Amarasinghe, PhD
Assistant Professor
Physics and Biophysics

Dorothy Kunde
Administrative Assistant
Biological Sciences

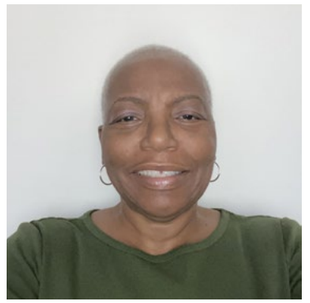
Grant Stevens
Lab Supply Technician
Biological Sciences

Ashish Sarker, PhD
Assistant Professor
Chemistry and Biochemistry

Beulah Ansa
Lecturer
Mathematics

Matthew Habeck, PhD
Assistant Professor
Mathematics

Alexus Wimberly
Administrative Assistant
Chemistry and Biochemistry



Patricia Pauling
Administrative Assistant
Neuroscience

Indy Ayers
Administrative Assistant
College of Science and Mathematics

Paduma Samarawickrama, PhD
Assistant Professor
Mathematics

Sanker Sikder, PhD
Assistant Professor
Mathematics

Heather Wood, PhD
Instructor
Mathematics

In Memoriam: Dr. Maria Eugenia Sabbatini

Photo of Maria Eugenia Sabbatini provided by her husband, Michael Murray.

On October 17, 2024, longtime and beloved College of Science and Mathematics (CSM) faculty member, Maria Eugenia Sabbatini, PhD, passed away after her months-long struggle with advanced kidney cancer.

Sabbatini was a professor of biology in the Department of Biological Sciences. Originally from Argentina, Sabbatini moved to the United States in 2006 after completing a PhD in physiology at the University of Buenos Aires, Argentina. She was accepted into a postdoctoral position at the University of Michigan under John Williams, PhD, where her research was focused on better understanding processes involving the exocrine pancreas. Both Williams and her PhD mentor from the University of Buenos Aires, Liliana Bianciotti, PhD, noted her enthusiasm for research and the ease with which she got along with her colleagues.

Sabbatini's husband, Michael Murray, PhD, is a faculty member faculty in the same department. The two met in 2010 while Murray was working for an environmental nonprofit and teaching part-time at the University of Michigan. Their work differed greatly—Sabbatini researched pancreas physiology while Murray focused on environmental science and policy. Although they both had an interest in science, what brought them together had nothing to do with academics.

"We met through a salsa dance class," Murray said. Dance was one of Sabbatini's great joys. Early on she and Murray spent much of their free time dancing salsa, bachata, merengue, cumbia and cha-cha, and he made efforts to learn the more challenging tango, which Sabbatini really enjoyed.

The two married in 2012 and moved to Augusta in 2013 after accepting positions at Augusta University. Sabbatini became a fixture in Biological Sciences at CSM ever since. Her presence in the college was marked by the same ferocious zeal she had for dancing, pouring her efforts into research, teaching and service.

Those who knew her noted that Sabbatini's work ethic, passion for research and kindness were tremendous.

"The hardest working person I have ever met," said Amy Abdulovic-Cui, PhD, Interim Chair of the Department of Biological Sciences. "She was just very genuine. We lost a dear family member."

Even after her diagnosis in February 2024, Sabbatini continued her work. She went into surgery immediately, but still managed to take part in a National Institutes of Health (NIH) conference call from her hospital bed just days later. While undergoing chemotherapy and immunotherapy, she worked with students and colleagues to publish a paper over the summer, and even chaired promotion and tenure committees in August and September.

Sabbatini's spirit for teaching equaled her love of research. Students and faculty affirmed that Sabbatini was as invested in teaching her students as she was in her own research. Her teaching load consumed as much time and energy as her research, and she was eager in her mentoring of students, both those whom she invited to work alongside her in her lab and those who approached her to advise them on their thesis projects.

"I was working on my honors thesis and even though her area of research was no in liver cells, she jumped into the project and took extra time that she did not have to learn to culture the liver cells we used," said Shelby Buckner, MD, a former student of Sabbatini's. "I hope everyone can experience having that kind of a teacher and mentor in their lives."

Altogether, Sabbatini mentored over three dozen undergraduate students and multiple graduate students. She served five times as a mentor in the Center for Undergraduate Research and Scholarship (CURS) and was awarded the CURS Mentor Excellence Award in 2020.

In the wake of her passing, Murray is spearheading an effort to establish a scholarship fund in Sabbatini's name. Murray hopes that the fund will eventually grow to support both undergraduate and graduate students in their research.

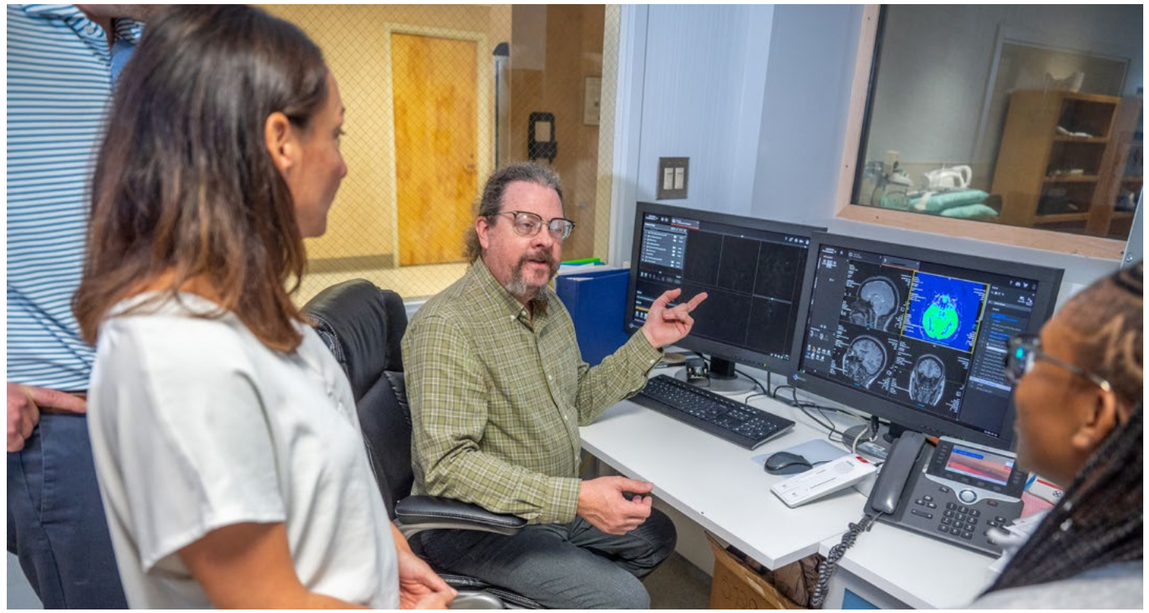
"I know how important it was for her to be able to work with students," Murray said. "And research was what she loved. I just thought it would be a nice legacy to have."

Sabbatini is survived by her husband, Murray, her parents and brother in Argentina, in-laws in Colorado and her two cats, Sunny and Peachita. A celebration of her life is being planned for February 2025, at which current and former co-workers, students, family and friends can come together to memorialize her lasting contributions to both the people in her life, her field and the institution to which she gave so much of herself.

Sabbatini and Bianciotti at a conference in 2002 (above).

Sabbatini with her students in the lab (above) and honors night (below).

Neuroscience Program: A Growing Hub for Interdisciplinary Science and Research



Nathan Yanasak, PhD, explains a brain scan to a neuroscience student.

Since its inception in August 2023, the BS in Neuroscience program at the College of Science and Mathematics has seen remarkable growth. Within one year, enrollment has skyrocketed from 14 to 78 majors, reflecting its appeal to students interested in exploring the complexities of the brain and nervous system. The addition this year of two full-time faculty members, Stephen Tymanskyj, PhD, and Julie Butler, PhD, further underscores the program's commitment to fostering excellence in teaching and research.

Amy Abdulovic-Cui, PhD, the neuroscience program director, stated, "Neuroscience is a dynamic and interdisciplinary field, seamlessly integrating concepts from biology, chemistry, physics, psychology, and mathematics." As one of the fastest-growing scientific disciplines, it offers students broad opportunities in healthcare, research, and industries such as biotechnology, pharmaceuticals, and artificial intelligence. This expansive career potential makes neuroscience an attractive major for students aiming to enter cutting-edge fields.

The College's neuroscience program is especially noteworthy as the third such degree program in the University System of Georgia (USG) and the only one based at an institution with a medical school. This unique positioning provides students access to unparalleled resources and collaborative research opportunities across disciplines.

The demand for neuroscience courses has surged with the program's growth. According to Sara Guediche, PhD, her Introduction in Neuroscience class expanded from 14 students in Fall 2023 to 36 students in Fall 2024, with many more students eager to join the program.

"There are actually more students signed up as neuroscience majors who couldn't fit the Intro class into their schedules this fall," said Guediche. "I expect this number will continue to increase."

The expansion has also led to the development of new course offerings set to launch in Fall 2025. Guediche will teach Cognitive Neuroscience, a core course for the program, while Evan Goldstein, PhD, will teach Neurobiology of Disease. Dr. Tymanskyj will introduce students to Neuropharmacology, marking its first semester being offered.

Undergraduate research lies at the core of the neuroscience program's mission, and it is thriving. Dr. Guediche's lab hosts four undergraduates, a research assistant, and a rotating PhD student, while Dr. Goldstein's lab has grown from four to seven students, many from interdisciplinary backgrounds.

"I chose neuroscience because there is still so much to be explored in the field," said Isaac Bloom, a second-year neuroscience major. "Working in neuroscience research with Dr. Goldstein has given me a clear purpose to my studies, both in my courses and outside the classroom."

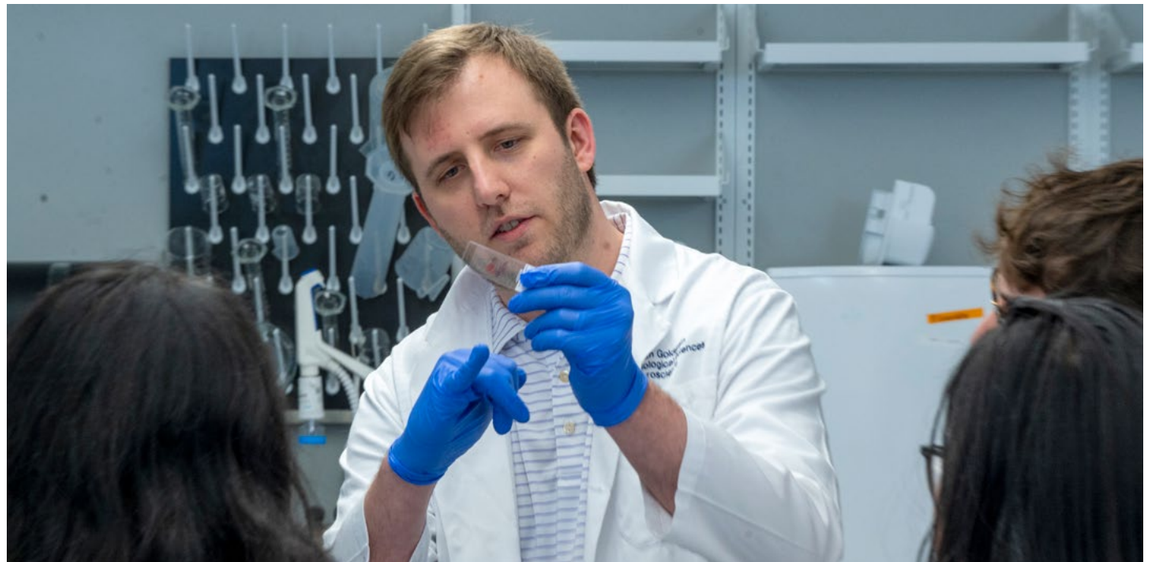
Neuroscience faculty hope the program's emphasis on research will establish it as a pipeline for graduate and professional training, producing well-prepared, critically thinking graduates.

The neuroscience program's growth mirrors the rapid expansion of the field itself. With new courses, research opportunities, and a steady influx of passionate students, it is becoming a cornerstone of interdisciplinary science and innovation in the College.

For students seeking a major that offers intellectual challenge, practical skills, and meaningful career pathways, neuroscience stands out as a compelling choice.

Tymanskj (above) and Butler (below) both joined the College's neuroscience program in 2024

Goldstein shows students in his lab a microscope slide.



Department of Physics and Biophysics and Augusta Utilities Collaboration Marks 10 Years

The 2024 Augusta Utilities Summer Intern Program students after their Summer Showcase in August.

The College of Science and Mathematics' Augusta Utilities Summer Intern Program highlighted accomplishments at their annual Summer Research Presentation on August 16, 2024.

The program began in 2014 as a collaboration between Augusta Utilities, the city's water utility department, and the Department of Physics and Biophysics at Augusta University. It grew out of efforts led by Augusta Utilities' Abie Ladson, Hameed Malik, PhD, Oscar Flite, PhD, and Wes Byne to reduce costs of stormwater management and gather more data related to water quality and stormwater management in Augusta. The city has $150 million worth of unfunded liabilities associated with stormwater.

Around the same time, Andy Hauger, PhD, a Fuller E. Callaway Professor of Physics Professor of Physics in CSM's Department of Physics and Biophysics, started integrating Arduino, an open-source electronics platform using micro-controllers, into his curriculum. A colleague, Dr. Chris Bates, an associate professor in the Department of Biological Sciences, introduced Hauger to the device, which has since become a staple both for his work with his classes and for Augusta Utilities.

"That was where it all changed," said Hauger. "Now, you cannot get away from Arduinos in our department."

When Flite introduced Hauger and Byne in 2014, and Byne attended the meeting with a box of Arduinos, the Augusta Utilities program as it is known today was born. Hauger and Byne's partnership led to students from Augusta University working on projects guided by Augusta Utilities and built inexpensively through Arduino technology. These projects, deployed at numerous locations in Augusta, collect usable data and provide Augusta Utilities cost-effective equipment that would otherwise cost hundreds and sometimes thousands of dollars more if bought from industrial vendors.

"We came up with this idea to put all this stuff together and start working on something," said Hauger. "So we decided to jump in on this."

What began as summer camp with a single student, Michael Roeber, rigging buckets with ping pong balls and Arduinos to make rain gauges, has now grown into a robust program that offers hands-on, paid internships to students from biology, chemistry, physics and computer science majors every year. Students that join the program tackle a project of their own or an inherited project from prior students aimed at helping Augusta Utilities address the needs of the city at a more affordable cost while offering undergraduate students opportunities for real world problem-solving.

This Year's Student Projects

Remote Water Quality Monitoring
Alexi Wilcher, Emma Herndon, Mason Leavins, V Makowski

Built a low-cost, customizable water quality sensor to monitor the health of water bodies in Augusta. This sensor is cheaper than its industrial counterpart (about $1,100 vs $2,100) and boasts increased memory storage for data as well as a GPS tracker to specify time and location data.

Measuring Water Flow
Kaylee O'Steen

Built a low-cost water velocity sensor with solar charging capabilities, data transmission capabilities, and a display that shows information as it comes in. This sensor costs only about $100 to produce, compared to the commercial model range of $2,000-$4,000, allowing more of them to be deployed and easily replaced if damaged.

Remote Water Depth Sensing
Kathryn Dunstan

Built an affordable water depth sensor with data collection and transmission capabilities, with the goal of placing multiple sensors in water bodies in the Augusta area to gather data that can be used for flood prevention efforts. Commercial depth sensors range from $600 to several thousand, whereas this one costs $160 to build.

Pipe Mapping Robot
Forest Ray

Built a robot that moves through pipes to map them. It comes with a controller that can direct it along certain paths and is outfitted with sensors that give positional data which helps create maps of pipe systems in the Augusta area.

Smart Trash
Cameron Cunningham

Built a sensor to monitor the amount of trash that accumulates in a garbage can. The sensor has three levels: green (not very full), yellow (getting full, may want to check), and red (need to check and empty out). Several smart trash cans have already been deployed for testing on Augusta University's Health Sciences Campus.

Smart City Applications with LoRa
Wesley Cooke

Created a server component for a LoRa network (Long Range Radio) that allows for connected devices to display their collected data on a dashboard for easy analysis. Many previous Augusta Utilities projects utilize LoRa, which allows data to be transmitted and presented easily online to monitor designated areas.

Smart City Applications with Particle
Patrick Rimbey

Created a network through Particle, a platform that uses the Cloud to store and transfer data through cellular networks, which connects to devices that other students in the program have built. Like LoRa, devices connected through Particle can be remotely monitored to check functionality and confirm that data is coming through.

AUGUSTA UNIVERSITY
COLLEGE OF SCIENCE AND MATHEMATICS

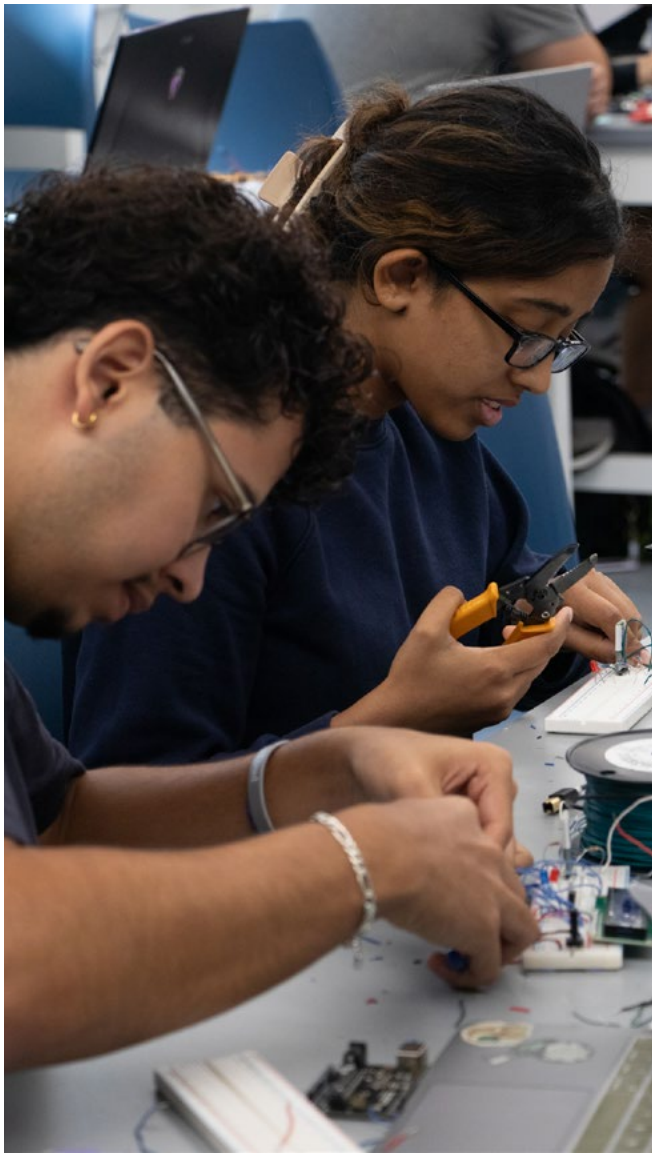
College of Science and Mathematics
1210 Goss Lane,
Augusta, Georgia 30912

Your gift to the College of Science and Mathematics can support students by:

- Increasing a scholarship endowment to help students offset tuition
- Enabling students who have financial need to participate in research under the mentorship of a faculty member through the award of a stipend for a research assistantship
- Assisting a student with travel expenses required to present research at a national or regional scientific conference

To support College of Science and Mathematics students, use the QR code or go to augusta.edu/giving/cosm to make your gift. To speak to someone about a targeted gift, contact the AU Foundation at 706-721-4001 or philanthropy@augusta.edu.

To support the Maria Eugenia Sabbatini, PhD, scholarship fund, please donate to the Department of Biology Fund 294190 at the Augusta University Foundation in her memory. You can navigate directly to the Biology Discretionary Fund and indicate it is a Tribute Gift for Maria Eugenia Sabbatini, PhD.



Thank you for your support!

Stay Updated @aug_csm

#CollegeofScienceandMath • www.augusta.edu/scimath