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Sciences Newsletter

Official Newsletter for CBU School of Sciences

A Word from the Interim Dean

Dr. James E. Moore

I hope this inaugural newsletter finds you well! My name is James Moore, Interim Dean of the School of Sciences. I am a broadly trained ecologist and educator, and have been an academic administrator for the past seven years. As a professor at CBU, I have been twice honored with the Dr. John J. Shea Endowed Chair in Science and Mathematics and was the recipient of the Outstanding New Academic Advisor Award. I volunteer with the Tennessee Naturalist Program at Memphis Botanic Garden, ECO Adventure Camp, Mid-South Naturalist Program, Memphis Shelby County School System, Mid-South Trail Association, and the Exotic Pest Plant Council.

I am an avid outdoorsman and love to camp, hike, fish, and mountain bike. My wife Lisa, a clinical practice manager, and I have one son Edwin, who is in elementary school.

This newsletter will be the first of 6 throughout the academic year. Each will begin with general School of Sciences information then focus on an individual department. New faces/retirements as well as faculty and alumni accomplishments from that department will be the focus.

Our September newsletter highlights the Wilson Science Scholars and the Physics and Natural Science department. I hope you enjoy!

Sincerely,
James E. Moore



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Wilson Science Scholars

Kemmons Wilson Family Foundation Scholarship Recipients

The Kemmons Wilson Family Foundation gives CBU \$25,000 every year to go towards five Wilson Science Scholars. These are competitive, high-achieving students majoring in the sciences. Ideally, they are awarded to a student in their Freshman or Sophomore year and they continue to receive the scholarship through graduation. Kemmons Wilson wants to support these students, help them with networking, and ultimately keep good talent in Memphis. KWFF hosts an annual scholars breakfast for their Board Members to meet Wilson Scholars and network as well as understand higher ed needs (this year, the breakfast will be held on November 14th at 8am). KWFF also hosts brunch for graduating scholars at the end of each academic year.



The Kemmons Wilson Family Foundation was created in Memphis in 1960 to make positive investments in the city loved by both Dorothy and Kemmons

Hannah Casey

Biomedical Sciences, class of 2024

Hi, I'm Hannah! I am a senior Biomedical Sciences major with minors in Chemistry and Religious Studies. I am the Vice President for the Honors Program and the President for the Mu Tau chapter of Beta Beta Beta Biology Honors Society at CBU. My hopes after graduation are to work in the medical field as a Physician's Assistant.

This scholarship, along with others, allowed me to come to CBU with less financial stress and focus on my academics, involvement on campus, and personal development. It's also given me the opportunity to connect and network not only with the other scholars at CBU, but also the scholars from other universities.





Jessica Bowen

Chemistry, class of 2024

My name is Jessica Bowen and I am 21 years old. I am a senior chemistry major here at CBU with dual-minors in Math and Spanish. I would like to go on to graduate school and get a PhD in chemistry so that I can conduct environmental research and help our planet.

This scholarship has allowed me to focus on my education instead of worrying so much about how to pay for it. I would not have been able to go to such a great school as CBU without the financial help this scholarship provides me, and I am grateful for it every day.



Ryan Mason

Computer Science and Mathematics, class of 2025

Hello, my name is Ryan Mason, and I am a Computer Science and Mathematics major. Receiving the Wilson scholarship has significantly shaped my future academic journey at CBU.

Prior to being chosen as a Wilson scholar, I was juggling two part-time jobs for students; this scholarship has allowed me to transition to just one part-time job and given me a precious gift—extra time. I use this time for my education and engagement with campus life. Engagement on campus at networking events, seminars, and extracurricular activities has become an integral part of my routine. The Wilson scholarship has also alleviated many of my everyday financial concerns, including funding my travel to and from school.

The scholarship has provided me with the time, resources, and peace of mind to fully embrace my studies and actively contribute to campus life. I am truly honored to be a recipient of this scholarship and remain committed to making the most of this remarkable opportunity.



Brayden Scott

Biology, class of 2024

My name is Brayden Scott, and I'm a senior biology major at Christian Brothers University. After college, I want to go into the veterinary field and work with animals.

Being a Wilson Scholar has helped me greatly in my academic career. With the support of this scholarship, I can take the classes I need to succeed without worrying about the cost.



Nicole Brignole

Biology, class of 2024

Hi, I'm Nicole, and I am a senior biology major with a minor in psychology. I currently am a member of Tri-Beta, Psychology Club, Zeta Tau Alpha, and am the acting president of the CBU Panhellenic Council.

Over the summer I worked with Dr. Henson (Biology) on a research project tracking the nest success rates of Black-Bellied Whistling Ducks. Over the course of my college career, I have also worked at Christ Methodist Day School as an after-school care teacher and summer camp counselor. Upon completion of my degree, I am currently planning to pursue a master's in education and begin a career in education.

Being a Kemmons Wilson Scholar has given me the opportunity to be more involved on campus and focus on my studies without worrying about the cost of my education. This scholarship has also granted me the opportunity to network with other scholars on campus.



Dr. John Varriano
(Professor, Department
Chair) demonstrates how to
adjust equipment for a
moment of inertia lab with
CBU students



Featured Department: Physics and Natural Science

Chair: Dr. John Varriano

The Department of Physics and Natural Science offers two degrees emphasizing physics, a B.S. in physics and a B.S. in engineering physics. The physics degree consists of a traditional physics program that prepares students for an industrial position or graduate study in physics or other associated scientific areas. Beyond the survey of topics covered in the three-semester introductory sequence, physics majors study classical and quantum mechanics, electromagnetism, thermodynamics, optics, relativity, and a lot of mathematics. In fact, many of our students earn a B.S. in Mathematics to go along with their physics degrees. The engineering degree is geared toward the application of physics and replaces some of the upper-level math and physics courses with engineering courses from CBU's Gadomski School of Engineering.

The department also administers two other degrees, a B.S. in natural science and a B.S. in natural science with licensure in education. Both degrees give the student flexibility in choosing science courses from biology, chemistry, and physics as well as a large number of free electives. Often students interested in post-baccalaureate programs such as medicine, optometry, and physical therapy choose the natural science degree. As the title suggests, the second degree requires specific courses in education and results in licensure to teach a science at the middle and high school level with passing of the state licensure exam.

The department also serves other science and engineering majors with introductory physics courses as well as general education courses designed for other majors. There were four faculty members up until this past spring when Dr. Johnny Holmes retired after forty-seven (yes, 47) years of service. Current members are Dr. [Suja Kochat](#), Dr. [Ted Clarke](#), and Dr. [John Varriano](#).



Photo Courtesy of Dr. Jerad Henson

Dr. Johnny Holmes (third from left) is presented a painting of the Cooper-Wilson Center for Life Sciences and Assisi Science Hall by other faculty members of the department to celebrate his retirement. The other members are (L to R) Dr. Suja Kochat, Dr. Ted Clarke, & Dr. John Varriano.

Dr. Johnny Holmes Named Professor Emeritus

Dr. Johnny Holmes retired from CBU this past spring semester after forty-seven years as a faculty member. Johnny’s dedication and service to the department, the school, and the CBU community were recognized with the granting of the rank of Professor Emeritus and announced at the 2023 Commencement ceremony in May.

Excerpts from the letter authored by members of the Department of Physics & Natural Science recommending Dr. Holmes for Emeritus status:

“Johnny has been teaching physics and astronomy at CBU for forty-seven years and he also served as Dean of the School of Sciences for nineteen of those years. The quality and effectiveness of his teaching has always been outstanding. A review of his annual evaluations and student evaluations will show how well he is appreciated by students and faculty colleagues. Teaching is Johnny’s passion and his highest priority as a faculty member. When he was dean, he adopted our school motto to be “effective and enjoyable education”.

Johnny certainly has strived to follow that motto in his own teaching.

While Johnny’s service as dean was outstanding, he is foremost an outstanding teacher. He is a teacher in the Lasallian tradition. He is passionate about educating students from all backgrounds. He has patience, is kind to all, and respects all. He has certainly made education enjoyable and effective during his forty-seven years at CBU.”

Congratulations, Johnny, and thank you for everything you have done for CBU!



Career Highlights

Forty-seven years of service

Award-winning Teaching

Valued Mentor and Colleague

Faculty and Student Advocate

Dean of the School of Sciences 1997-2016



Faculty News

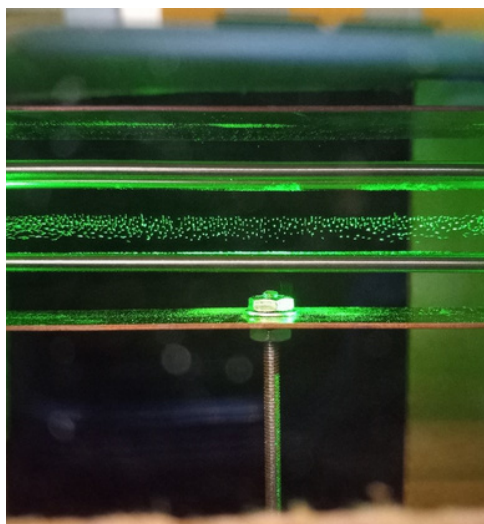


Dr. Ted Clarke

Dr. Ted Clarke has a research background in applying fractional calculus to physical systems and has worked with several students in this area for their senior research projects. Dr. Clarke recently worked with Rachel Stephens (B.S Physics & Mathematics, 2020). This work culminated in a paper entitled “Time-Fractional Radial Diffusion in a Sphere with Non-Constant Surface Concentration” that Dr. Clarke presented at the 2023 March Meeting of the American Physical Society (APS) in Las Vegas. The APS March meeting is the largest annual gathering of physicists in the world.

Dr. Suja Kochat

Dr. Suja Kochat is developing a physical science course intended for students that desire to be science educators at the elementary and middle school level. The lab activities that she is developing for the course can be transferred to the school classrooms once the CBU students become teachers. One such activity involves calculating the speed of sound in air using the resonance of sound waves in a tube. Dr. Kochat made a poster presentation of the activity entitled Speed of Sound-Resonance Tube at the annual meeting of the Tennessee Section of the American Association of Physics Teachers (TAAPT) at the University of Tennessee, Knoxville in March 2023. The mission of TAAPT is to enhance the understanding and appreciation of physics across Tennessee through teaching.



Dr. John Varriano

Dr. John Varriano partnered with the Low Energy Physics Ion Trapping Group at Argonne National Laboratory to build a demonstration linear quadrupole ion trap (Paul trap) based on the one used at Argonne to study radioactive ions. He collaborated with the group in the design and constructed two models at CBU during the summer of 2022. The table-top version traps charged Lycopodium (club moss) spores using oscillating and static electric fields (pictured left). One model was sent to Argonne for public demonstrations and one will be kept at CBU. Dr. Varriano presented his work in the talk “Construction and Operation of a Microparticle Electrodynamic Ion Trap” at the TAAPT meeting in March 2023 at UT Knoxville.

Student and Alumni News

All students earning a B.S. degree in physics or engineering physics must perform a research project. Some of our students participate in Research Experience for Undergraduate (REU) programs at other colleges and universities during the summer. The National Science Foundation (NSF) sponsors REU programs at various institutions across the U.S. Other students work with faculty members at CBU during the academic year. We find that these research projects serve our students well in gaining admission to graduate programs and in their post-CBU careers.

Ali Crisp (Physics & Mathematics, 2018) participated in an REU program in astrophysics at Louisiana State University in the summer of 2016 between her sophomore and junior years. She performed research involving the interactions of close binary stars. Ali was admitted to the Ph.D. program at LSU in astrophysics upon graduating from CBU and is currently finishing up her research into “Hot Jupiters”, a class of giant exoplanets. Ali just returned from the Cerro Tololo Inter-American Observatory in Chile.



Student and Alumni News



Luke Wade (Physics & Mathematics, 2018) participated in an REU program at California State University at Fresno during the summer of 2017. Luke worked on projects involving Fourier transforms and eigenspaces, two areas where he was able to apply his interests in both physics and mathematics. Luke also has an interest in acoustics which led him to develop a special topics course in the physics of music that he co-taught with Dr. Varriano to eleven students during the spring semester of 2018. Dr. Varriano readily admits that Luke did all of the teaching while Dr. Varriano did the grading after learning from Luke! Luke went on to earn an M.S. degree in acoustics from Pennsylvania State University where he studied the formation of sonic booms. He is now back in Memphis and is an Assistant Professor in Teaching and Coordinator in the Department of Physics and Materials Science at the University of Memphis.



Two recent graduates that performed their research projects at CBU are Rachel Stephens (Physics & Mathematics, 2020) and Donal Newsome (Physics, Engineering Physics & Mathematics, 2021). Both worked with Dr. Ted Clarke in applying fractional calculus in modeling physical systems (see the note on page 07 about Dr. Clarke's presentation of the work done with Rachel at the annual March meeting of the American Physical Society). Rachel interned at the FBI regional office while a student at CBU and accepted a full-time position there after graduating. She is currently working on a Master's degree in cybersecurity from Georgia Tech. Donal works at FedEx and will soon be earning two Master's degrees from the University of Memphis, one in physics and one in mechanical engineering. Donal was selected as a 2021 CBU Lasallian Fellow for his scholarship, leadership, and service while at CBU.

Alumni Support

Alumni Gifts Fund Student Learning Experiences!



Pictured: The interferometry kit purchased with a monetary gift from alum Analice Sowell and her family.

An optical interferometry kit was purchased recently from Thorlabs using funds donated by Analice Sowell and her family. The kit will be used in a senior research project this academic year to build a Michelson interferometer to measure coherence lengths of different light sources as well as investigate the thermal expansion of metals. It will then become a regular fixture in the upper-level lab course (PHYS 420: Optical and Advanced Experiments).

Analice is a long-time friend and supporter of CBU and the department. She graduated from CBU in 2002 with a Bachelor of Science in chemistry with a minor in physics and later earned a Master of Arts in Teaching from CBU in 2005. She received the Distinguished Young Alumnus Award in 2014. The monetary donations from Analice and her family have been used to purchase several pieces of lab equipment in the past and have fully funded the inductions of our students into Sigma Pi Sigma, the national physics honor society.

THANK YOU, Analice, for your support over all these years!