

Regents' Excellence in Teaching and Learning  
Felton Jenkins, Jr. Hall of Fame Faculty Award

Erin Shufro  
Assistant Professor of Chemistry, Division Chair Physical Sciences, and Math GHC

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October 25, 2021

Board of Regents of the University System of  
Georgia 270 Washington Street SW  
Atlanta, GA 30334

Dear Regents' Teaching Excellence Awards Selection Committee,

It is my honor and pleasure to nominate Georgia Highlands College (GHC) Assistant Professor of Chemistry Erin Shufro for the Felton Jenkins Jr. Hall of Fame Faculty Award. Since joining the GHC faculty, Ms. Shufro has demonstrated excellence in teaching, dedication to student success, a passion for scholarship and professional growth, and a commitment to serving the college and community. Her accomplishments and contributions are evidence that she is an outstanding faculty worthy of this prestigious award.

Ms. Shufro is a dedicated and passionate teacher with a genuine desire to see her students succeed. She has invested her time and talents into implementing active learning strategies into her classroom, emphasizes mastery of concepts rather than rote memorization, focuses on teaching problem-solving skills, and encourages collaboration. As a member of two Affordable Learning Georgia grants, she was instrumental in redesigning the Principles of Chemistry sequence, creating instructional videos, and launching the GHC Chemistry YouTube channel. These efforts significantly reduced the financial burden that high-cost textbooks place on our students and resulted in an increase in pass rates in the general chemistry sequence. Overall, Ms. Shufro works tirelessly to provide students with the tools necessary to succeed in chemistry and prepare them for the rigors of subsequent STEM courses.

Her passion for improving STEM education and overall student success is evident through the many initiatives and projects she has implemented outside of the traditional classroom setting. Ms. Shufro has designed and led Student Success Workshops focused on teaching students how to learn and co-facilitated faculty learning communities on mindset, metacognition, and high-impact practices. She has joined our HIPs Implementation Team, serving as a volunteer and not as one of the faculty supported by USG stipends. Recognizing that our students needed more support and to maintain a face-to-face connection to faculty, Ms. Shufro started a faculty-led, virtual supplemental instruction (SI) program during the COVID-19 pandemic. This effort, supported by the USG STEM Initiative, has grown beyond STEM to include SI sessions hosted by the GHC Writing Center faculty, aimed at improving written communication and proper use of citations across disciplines. Ms. Shufro continues to organize and manage the SI program, recruit more faculty to donate their time, and increase the number of sessions offered each semester. This semester, Ms. Shufro created a community "STEM Space" on the GHC Cartersville Campus, where students can get tutoring and help from STEM faculty who donate office hours to serve in this collaborative space.

In 2020, Ms. Shufro started GHC's first undergraduate research program from the ground up, and without any start-up funds by developing a partnership with the Lake Allatoona Association, a local non-profit organization focused on improving water quality safety and recreational use. She has recruited four faculty mentors, and over twenty students, first-year students, and sophomores are researching various environmental biology and chemistry topics. In the less than two years her research program has existed, she has mentored three students accepted to national research conferences, one of whom was recently published.

Ms. Shufro believes success in STEM starts well before students enter college. To that end, she volunteers for numerous K-12 STEM outreach events through which she seeks to inspire young students to pursue careers in STEM fields. She also serves as a member of the GHC executive committee responsible for planning and hosting a regional First Lego League Robotics Tournament attended by several elementary schools in the GHC service area. Finally, Ms. Shufro has developed and led professional development workshops for Bartow County Schools' STEM teachers.

In conclusion, I highly recommend Erin Shufro for the Felton Jenkins Jr. Hall of Fame Faculty Award. She is strongly committed to teaching and learning and fostering students' academic success in and outside the classroom. Her work is outstanding, and her efforts are laudable. She is a role model for all USG faculty and a teacher in the truest sense of the word. I encourage you to give her application strong consideration.

Sincerely,

*Sarah Coakley*

Sarah Coakley, Ph.D.  
Interim Provost and Chief Academic  
Officer Georgia Highlands College  
[scoakley@highlands.edu](mailto:scoakley@highlands.edu)

Dear Award Committee,

I am writing this letter in support of Erin Shufro for the Felton Jenkins, Jr. Hall of Fame Faculty Award. I have known Erin personally and professionally for five years now. We have both been faculty and department chairs simultaneous to each other over that time. This has given me a chance to see all that she is capable of.

Erin is one of the hardest workers I have ever had the chance to meet. She consistently exceeds expectations in all areas she applies herself to. One recent example of this is she created a supplemental instruction program that has grown to be highly successful. Through her efforts, students who participated in the SI sessions have a retention rate at the college of over 95% across all STEM degrees (compared to 65% for non-participants). These students are now statistically more likely to make a higher grade than they otherwise would have without this program. Her creativity, organization, leadership, and work on this project are directly tied to its success.

Erin is also dedicated to student success. She also continues to create content and shift her courses to increase student success. She was awarded grants from the state to develop open education resources. These resources meet the needs of students in North GA and have saved millions of dollars over the years for our students. Not only has she done this as a faculty member, but she has also led similar initiatives as a department chair and helped other disciplines in her department transition to open educational resources as opposed to paid textbooks.

On top of all the wonderful things she does to support student success in the classroom, she has created a highly successful research program for our undergraduate students. GHC is not a research institution, and there are no requirements of faculty at GHC to do research. However, Erin recognized that students moving on to larger 4-year institutions had difficulty finding undergraduate research opportunities, so she created one for any student to join and gain that valuable experience. While this program has only been running a few short years, she has overseen 60+ students, had 5 or 6 students give presentations at regional and national conferences, and one student has even published from this opportunity. All of these students participating in this opportunity are leaving GHC with valuable experience that will help them achieve their own educational and career goals.

Erin is motivated, hardworking, student-driven, and undoubtedly one of the best and most trusted colleagues I have had in my 10+ years working in higher education. There are countless examples of her accolades that demonstrate these claims that I could go on and on about. The bottom line is that from working with Erin over these last years, I have no doubt any division, department, or school she works in is changed for the betterment of all because of her leadership and focus on student success.

I would give my highest recommendation to Erin to be considered for your award, and I know she will be a shining example of what this award represents.

Jason Christian, Interim Dean – School of STEM, Georgia Highlands College, 706-368-7532,  
[jchrist@highlands.edu](mailto:jchrist@highlands.edu)

## Letter from Colleague – Ericka Walczak

October 28, 2021

To whom it may concern,

I am grateful for the opportunity to write a letter of support for Erin Shufro for the Felton Jenkins Jr. Faculty Hall of Fame Award at the University System of Georgia (USG). I first met Erin in 2019 as she would voluntarily check on me in my new role as the biology instructor. At the time, she was still in the chemistry chair; she still wanted to make sure I was surviving the new position though I was not in her discipline. Erin has a desire to check on all faculty and help them out in any way she can. This desire is not only for the success of each faculty member but also for the student's success.

Erin has and is working on improving student success at Georgia Highlands College in many different aspects. One implementation was cooperatively working on creating and maintaining undergraduate research with a local organization Lake Allatoona Association (LAA). This collaboration aims to monitor the water quality of a local reservoir that is also a resource for drinking water in this area. This has allowed our students to gain experience in the research process, development, and laboratory skills training. The program has increased in size from semester to semester, with up to 20 students participating in both chemical and microbiological analysis of water samples and the collection of water around the lake. Her role in this program has been crucial to its success, and she developed many of the protocols and student training programs and was a friendly face for the students to come to with questions. As a result, students have developed a strong sense of ownership in this project and hands-on experience in research.

Another example of Erin's dedication to student success is the creation of programs to assist students outside of the classroom. She has been a strong advocate for a program called STEM 411, which allows students to ask questions to faculty in a specific discipline with real-time answers. She has participated in training faculty for this program and promoting using STEM 411 as part of faculty for office hours. Just recently, Erin headed a project on developing a shared classroom space for faculty of different disciplines to come and complete office hours together. This space has promoted faculty collaboration as well and increased interest from the students. This space welcomes students to come and speak with instructors to get assistance or to just hang out. The classroom includes snacks, whiteboards, diagrams, and models, as well as comfy places to sit and chat.

Mrs. Shufro uses innovative tools to help increase student success and relate chemistry to real work applications inside the classroom. She has developed curriculum such as "Solving the Crime Using Isotopic Abundance" and "Determine the Density Kit" that assists the students in practicing chemistry problems and keeping students interested, and having fun. Another tool she uses to facilitate student success are videos covering key concepts and applications. Mrs. Shufro has created over 30 videos and has them organized in a YouTube channel accessible to her students. She has also assisted in curating a library guide that allows students access to lecture notes and practice problems. In addition to these tools, she stays on top of new ways to engage students. She has been incorporating high-impact practices into her curriculum by adding small stake

assignments with timely feedback and utilizing supplemental instruction to increase faculty and peer communication.

Mrs. Shufro truly cares about reaching our students to ensure they have the support they need to succeed at Georgia Highlands College. All her efforts go far above the rigors of faculty requirements to ensure that our students reach their full potential and transfer to a four-year university of their choice. She has my strongest support for the Felton Jenkins Jr. Faculty Hall of Fame Award.

Sincerely,

Ericka Walczak  
Instructor of Biology  
Georgia Highlands College  
[ewalczak@highlands.edu](mailto:ewalczak@highlands.edu)  
1-678-872-8482

October 29, 2021

Dear faculty award review committee,

With tremendous enthusiasm, I am writing in support of Division Chair Erin Shufro for the Felton Jenkins Jr. Faculty Teaching Excellence Award. I have known Erin since the summer of 2019 when I was finishing a National Science Foundation education grant based on my postdoctoral work in Chemistry Education. As such, I am well-positioned to comment on her strong commitment to teaching and the use of effective strategies to enhance student learning inside and outside of the classroom.

My background is in biochemistry, but I genuinely believe if I had a professor like Erin, I would have come to appreciate and enjoy chemistry about ten years before I did. In the simplest terms, I have seen that Erin can maximize student engagement, and at every opportunity, I have incorporated her strategies into my teaching. Erin routinely changes the presentation of material to meet students where they are. In lecture, I have observed that she rotates between covering material in short segments followed by small group community 'pod' work sessions to apply the knowledge before moving seamlessly to the next topic. This cycle allows her to keep the class on track for covering much material and enables her to move among the students. Students show their work, which Erin can guide back toward the intended answer if needed, and students also have an opportunity to verbalize their thinking processes. This is particularly important when there are multiple interpretations, and I have known Erin to be comfortable stating "it depends" then working through nuances that do not fit easily on a lecture slide. While some instructors may not be open to that level of vulnerability in front of students, I believe Erin fully embraces the facilitation of learning, with her role as a conduit of information, not gatekeeper of knowledge. In these small and safe spaces, understanding (not lecture) happens.

Erin is a creative and prolific educator and has a passion for chemistry that is clear to all students and colleagues. She has created newsletters and fliers to summarize course materials in a more accessible and enjoyable format than the open reading of a textbook. Students can then apply these materials as they work through problem-solving sessions in class or assignments at home. Erin also changes the focus of many activities to make them more practical. I have used her lessons to integrate mass calculations and chemical formulas multiple times with my students because it shifts the focus to something my students might encounter in their lifetime—finding a mislabeled bottle and trying to determine what is in it based on limited information. Erin has also converted chemistry topics that might seem purely academic exercises into applied scenarios in Mars colonization and forensic anthropology that students enjoy.

Erin's enthusiasm for applied learning has led her to create a co-curricular research group in the last few years. Students learn what science is like outside of assignments with predetermined outcomes, and with Erin's mentoring, they realize that science is as much about what we know as it is about what we do not know. Students fear the unknown, but as Erin guides them, it can be reimagined as an entrepreneurial opportunity, a philanthropic donation to the community, or simply a reason to be curious and excited about waking up every day as a lifelong learner.

In closing, I would like to reiterate my strongest support for Erin. In addition to the examples I listed above, she leads both teacher- and administrator-level initiatives to improve student learning and outcomes through tutoring, support services, and coaching. I could not have picked a better representative from our college or sector for the Felton Jenkins Jr. Faculty

Teaching Excellence Award. If I can be of any further assistance, please do not hesitate to contact me.

Sincerely,

A handwritten signature in blue ink that reads "S. Justin Polizzi". The signature is written in a cursive style and is enclosed within a thin, light-colored rectangular border.

Samuel Justin Polizzi, Assistant Professor of Chemistry, Georgia Highlands College 5441 GA-20, STEAM Building C, Room C207C, Cartersville, GA 30121 | 678-983-0636

October 31, 2021

To whom it may concern,

It is a great honor to write this letter for Professor Erin Shufro. I am currently a student at Georgia Highlands College, and I've known Professor Shufro since fall 2019, when I took her Principles of Chemistry II course. Little did I know how much of an impact she would go on to have on my education.

Right before I started her class, I came across the Honor's program at GHC, where students can team up with a professor to partake in undergraduate research. At this point, I had zero research project experience, with the only form of my research exposure being papers in English classes. After my first lecture in her class, I reluctantly went up to her, introduced myself, and asked her if she would be interested in doing an Honor's project with me. She immediately said yes, set up a meeting date, and enthusiastically guided me to genres of research topics we could explore. She had no idea about me as a student, knew how much commitment a research project can take, and had an immensely busy schedule of her own. Yet, without an ounce of hesitation, she agreed to help me organize and carry out my first research project. This shows the selflessness and interest in building a student's skills that Professor Shufro carries every day to her teaching career.

Since this was my first research project ever, I needed a research mentor that was a very hands-on guide for me. That's exactly who professor Shufro was. We underwent countless meetings to organize the start of the project. She convinced the school administration to fund the chemicals and equipment I needed for the project. She worked around my schedule, and would stay back late into the evenings as I would spend hours in the lab carrying out my research, in case I ran into any problems or needed a helping hand. Keep in mind that she had early morning classes, and had responsibilities across the multiple campuses of GHC. She made herself available for communication at any time, no matter if it was the weekend, week day, holiday, or anything. In every hiccup and hurdle that the project reached, I could always count on Professor Shufro's expertise and help in a heart-beat.

After the project was submitted for the Honor's program, I received my honor's credit, and her 'agreement' of research mentoring with me was fulfilled. However, she didn't just stop there. Despite being the chair of a vast STEM program, she still had time for my research development. She encouraged me to expand my project, and submit it to the National Conference for Undergraduate Research. I had never written an abstract for a conference before, let alone submit something to one, and once again, she was there to guide me every step of the way. Our project would go on to be accepted at NCUR, where I orally presented via Zoom this past summer. She also helped me formulate it into a paper, which got published in a scientific journal. With her immense guidance, support, and selfless commitment, I went from a student with no experience - reluctantly asking a professor to do research - to a published undergraduate researcher and a presenter at NCUR 2021. I would later need her help again as I researched radiation in physics, where she would approve and fund an expensive Geiger Counter for me.

This mentorship she provides to her students isn't limited to her class only. In fall 2020, I went through a personal trauma right before my finals, and missed all of the exams. With the majority

of my classes that semester being in STEM, I would once again look to our division chair, Professor Shufro, to help me out, and let me take all those finals and complete my classes the following semester. To this day, I know I can approach Professor Shufro with any problem, personal or educational, and she will drop everything to help me out.

I am only one of the dozens of students who can attest to these qualities that Professor Shufro possesses. She has organized a massive research project with a local lake association (Lake Allatoona). Dozens of GHC students can now take part in that undergraduate research program and learn the integral skills of organization and research that are very important in a STEM career. I had the honor of taking part in the project for a semester, and seeing first-hand how invested professor Shufro was with each and every student. Despite not being able to continue with the project due to my extremely busy schedule, I know that it has expanded and continued on to foster many new students each semester. When GHC looks back at its research culture and garners attention for development of research at a community college, it will owe an extreme debt of gratitude to the original founder of a research at the college: Professor Erin Shufro. And so will each and every student whose collegiate development was (and will be) greatly boosted by getting exposed to research under her wing.

She mentors many students like me, and she does it selflessly despite her busy schedule and tons of responsibilities of being a Division Chair of STEM. As far as I am concerned, I know that when I look back at my career down the line, I will always remember the pivotal moment I went up to my Chemistry II professor that first day of class. She has greatly helped me develop my personal, educational, and research skills, and I will take this development with me as I progress through my career. Professor Shufro deserves all the accolades and praise that she gets. Professors like her, who are so devoted to their students, are an incredible gift to their students and colleges. I am extremely lucky, and grateful, to have met Professor Shufro.

Respectfully,  
Muhammad Hanzala  
Georgia Highlands College

Samantha Lewis  
394 Knight Road  
Rockmart, Georgia 30153  
(404) 787-3022  
October 31, 2021

Dear USG Teaching Award Committee:

Erin Shufro has been my mentor and guide for more than half of my time at Georgia Highlands College. The lessons and guidance I have received from her have been vital to my success in undergraduate school. She is always available and willing to help me through many professional decisions and learning experiences as her research assistant.

I met Professor Shufro when I attended an information session she hosted for the Lake Allatoona Research Group (LARG). I was instantly attracted to the program as she described what the program could afford me for my graduate school application process. The day I attended the information session, I learned I had just lost the internship opportunity I had secured in a hospital due to Covid-19. I was incredibly stressed out because I had already enrolled in the internship class and it was beyond the drop add date. I asked her on a whim if she would be willing to help me collect some internship hours with LARG while I procured a new internship. She contacted the head of my program and emailed me back two days later with an offer to help me complete the entire 120-hour internship under her supervision within the research project. In the time since then, she has guided me from volunteer to intern to student research assistant (paid) to full-time employment as a Laboratory Coordinator at Georgia Highlands College.

I have depended on Professor Shufro to help me navigate through the challenges of build a research project from an idea through completion through presentations at conferences. She challenges me every day with the questions that motivate me to research the best methods to further our Lake Allatoona water quality research program. Professor Shufro has always had an open door for me to stop in and get her advice on ideas about broadening our research, managing our research, or even new methods to develop our quality control program within our LARG.

Through my time at Georgia Highlands College, Professor Shufro has encouraged me to seek answers to the questions I have had within my research not just with LARG but with other projects as well. She's been a source of advice in my honor's projects as well as helping me research graduate programs. Her ability to pass her knowledge to me has helped me grow into the student and researcher I have become. Because of her motivation, I have created my own curricula vitae, statement of purpose letter, and letter of intent to use while applying to graduate school. Her support and advice have been invaluable.

Erin Shufro is a professor that I attribute much of my academic success. If it were not for her, I wouldn't have had the opportunities afforded to me that I have, including presenting at conferences: National Association of Biology Teachers (NABT), National Conference of Undergraduate Research (NCUR), and Georgia Undergraduate Research Conference (GURC). Although I am planning to graduate in May 2022, I will always seek her guidance as a mentor and

attribute my successes in undergraduate school to her. No one deserves The Felton Jenkins, Jr. Hall of Fame Faculty Award more than Professor Erin Shufro.

Sincerely,  
Samantha Lewis  
Student  
Georgia Highlands College

# Erin K. Shufro

## Education

M.S. Chemistry, 2014 Northeastern University  
B.S. Chemistry, 2008, Rochester Institute of Technology  
A.S. Chemistry, 2007, Monroe Community College

## Leadership and Teaching

Division Chair, Physical Sciences  
Georgia Highlands College, School of STEM  
August 2019 – Present

Instructor & Assistant Professor of Chemistry  
Georgia Highlands College, School of STEM  
August 2016 – Present

## Service to the College and Community

Undergraduate Research Advisor

August 2020 – Present

- Initiated undergraduate research program. Research group studying water quality at a nearby lake in conjunction with community leaders. Program currently has 14 students in the fall of 21.

Learning Assistant/Supplemental Instruction coordinator

August 2018 – Present

- Recruit, train, and mentor students to run learning assistant program. Met with student LAs weekly to train/advise. Created materials used in sessions. SI sessions – Recruit faculty, plan, and advertise sessions. Offer training for SI sessions. To date, we have hosted over 100 SI sessions and have helped over 200 students. This program is ongoing.

STEM space coordinator

August 2021 – Present

- STEM Space is a classroom in a central location where faculty are doing open office hours for all students (not just their own). Recruit faculty, advertise services to students, coordinate coverage, and track data.

Honor's Research Mentor

August 2018 – Present

- Have mentored multiple honor's research projects. Two of my students were accepted to present at NCUR, one in 2018, one in 2019. Currently have a student researching Lake Allatoona with hopes to submit to this year's NCUR conference as well.

Cheerleading Coach

October 2016 – Present

Highschool Science Coach

August 2017 – Present

Other Outreach Events

August 2016 – Present

- Participated in multiple events, including guest judge at the annual speaking competition (multiple years), teen maze, reality store, media days, student success coach, spooky STEM-day, STEM success workshops (Cartersville and Marietta campuses), Bartow County teacher professional development days, First Lego League and many more.

### **Selected Publications and Presentation**

“New Chairs in a World of Hurt: Using Trauma-Informed Leadership to Guide Communication, Compassion, and Flexibility for Five New Chairs,” upcoming presentation, Academic Chairpersons Conference, February 2021

“Charging into the Open Resource Revolution: The Successes and Challenges of Implementing OERs within STEM Courses” presentation, American Association of Colleges and Universities Conference, November 2019

“Charging up Chemistry” Board of Regents campus spotlight, 2019

M. Hanzala, and E. Shufro. (2020) Reduction of Operating Costs in Fragrance Extractions. UNC Asheville Journal of Undergraduate Research. Accepted August 14, 2020.

I. Kendrick, A. Yakaboski, E. Kingston, J. Doan, N. Dimakis, E. Smotkin. (2013) Theoretical and experimental infrared spectra of hydrated and dehydrated Nafion. Journal of Polymer Science B 51 (18): 1329-1334.

J. Doan, N. Navarro, D. Kumari, K. Anderson, E. Kingston, C. Johnson, A. Vong, N. Dimakis, E. Smotkin. (2015) Symmetry-based IR group modes as dynamic probes of Nafion ion exchange site structure. Polymer 73: 34-41.

K. Anderson, E. Kingston, J. Romeo, J. Doan, N. Loupe, N. Dimakis, E. Smotkin. (2016) Infrared Spectroscopy of ion-induced cross-linked sulfonated poly (ether ether ketone). Polymer 93: 65-71.

### **Select Additional Professional Engagement**

Academic Chairperson Conference, Certified Safe Zone ally, Member “Meeting Students Where They Are” panel, KSU, Implicit Bias Training, Summer Course Redesign, KSU, Faculty Learning Community, KSU, Presented “Active Learning Strategies” breakout session fall kickoff meeting, GHC, Presented “Lessons in Flipping a Classroom” at Assessment Day.

## Reflective Statement of Teaching & Learning Philosophy and Objectives

*“Tell me, and I forget. Teach me, and I remember. Involve me, and I learn”* – Benjamin Franklin.

My teaching philosophy is based on the belief that students should drive learning and not the other way around. We often get so focused on disseminating the material that we forget that the goal is for the students to learn the material and not just memorize some facts for an exam. Several years ago, I realized that I, too, had fallen into that trap. I immediately set to work, trying to find a better way. I started with my students and asked them what I could do better to help them learn. Based on student feedback and my own experiences as a student, my course evolved from a standard lecture into an interactive experience.

One of the first things I noticed when I arrived at Georgia Highlands was how unprepared (mathematically) our students were. They often struggled with very basic concepts like scientific notation, percentages, and fractions. At first, I focused on working on lots of problems with them to grow comfortable with the math concepts and learn problem-solving. One day I was sitting with a group of students, and I realized that I was doing all the work, and though they seemed to follow along and understand the content, their test scores indicated that they didn't have a solid understanding. I went back to the drawing board and back to the literature to see what could be done. I found a YouTube series of videos by Eric Mazur, who teaches physics at Harvard University. I was somewhat surprised to learn that even his students struggled with basic concepts, mindset, and motivation. I took what I learned from his experiences and turned my classroom into something completely different. I now utilize a semi-flipped model where I still work examples with the students, but they work the problems, and I assist.

One of the most significant pieces of feedback I received from my students was that they were terrified of appearing stupid in front of their peers and me. I tried several methods of overcoming this since I rely heavily on student participation in my courses. I finally settled on a fantastic software called Mentimeter. This software allows me to do several things I wasn't able to before. It allows me to ask students questions in multiple formats (multiple choice, word cloud, ranking, and more) and has anonymous answers. It also allows the students to ask questions anonymously on any slide. Students are suddenly much more willing to participate when they know I don't know who is asking. I can also see in real-time what concepts they are struggling with and adjust my coverage as needed. The feedback has been very positive, and I plan to continue using it.

I'm a firm believer in sharing the why and using the Transparency in Teaching and Learning (TILT) method with my students. I have greater student buy-in when they know why the material is essential, how they will be assessed, and how they can show successful mastery of the content. I use multiple forms of assessment, and we practice them all before evaluating them on the content. While understanding problem solving and math are essential in chemistry, I also utilize other skills and tools such as drawing. We use Venn diagrams, labeling, and mapping to study the concepts and evaluate learning. Having multiple forms of assessment allows students who struggle with math to have other avenues to indicate understanding.

Another thing I noticed very early on was that students were very reluctant to ask for help and never utilized my office hours until they were too far behind to succeed. I asked them why they were so unwilling to ask for help and learned that many of them were surprised to find that my office hours were for them to use. I thought I had done an excellent job of conveying this information, but they had learned in high school that "office hours" were hours for the teacher to get things done, and they were unwilling to bother me during those times. Other common themes I heard were embarrassment and the idea that good students "just know the material." I realized

I'd have to get them away from these mindsets to help them be successful. The first thing I did was change the wording on my syllabus from "office hours" to "study hall." The second thing I did was begin an advertising campaign to my students that "good students get help."

A few of my students mentioned that it was intimidating going to see a professor in the department offices. I thought it would be a great idea to create a less formal space where students would feel comfortable coming and asking for help, and thus, STEM Space was born. STEM Space is a study room explicitly designed for students. All full-time and some part-time faculty donate some of their office hours to our space. We have coverage in science and math every weekday except Fridays (when the school is closed). We have snacks (provided by generous faculty), whiteboards, comfortable furniture, and study aids, including a complete skeleton for the anatomy and physiology students! Any student can get help from any faculty on duty which is great for students whose availability doesn't line up with their professors' available hours.

I've also become a massive proponent of STEM411, our online tutoring platform. Not all of our students are regularly on campus, and we frequently offer evening classes, but our tutoring center offers limited hours and few evening hours. STEM411 allows my students to submit a ticket any time, day or night, and receive a response within 24 hours. We also have a chat function that mimics the social media they are used to.

Our learning assistant program suffered when the pandemic hit, especially with the sudden switch to online learning. I was concerned that student learning would suffer, so I created the Supplemental Instruction (SI) program. Our SI program turned out to be a big hit with students. Last year we hosted over 60 sessions and helped over 150 students. We even expanded beyond our traditional STEM topics to offer sessions from the GHC writing center and library on writing and research papers. Since we provide all sessions as either hybrid or entirely online via zoom, we've been able to reach all of our campuses, including our smaller satellite locations. This has been a situation where we turned lemons into lemonade. The SI program has continued now that we are back to entirely face-to-face, and I anticipate it will continue for years to come.

Finally, one of the things that I most struggled with when I transferred from my community college to my four-year school was that I did not have any research experience. After moving to one of our sister schools, students who've come to see me reported that they too struggled to get into research labs because they had no experience. Research has repeatedly shown that the earlier a student participates in research, the more successful they'll be. Everyone kept telling me that I couldn't do it in our environment. They said that by the time a student has "enough knowledge" to participate in research, they're already thinking of transferring. I decided to think outside of the box, what constitutes "enough knowledge," and could I design a program to give my students the necessary skills and experience? The answer is a resounding yes!

I created the Lake Allatoona Research Group (LARG) in partnership with the Lake Allatoona Association (LAA), a local non-profit organization dedicated to protecting and preserving the lake. My students perform chemical (pH, dissolved oxygen, and much more) and biological analysis (e-coli and coliform bacteria) of the water. They learn lab techniques, field skills, cooperation and present their findings at regular group meetings and national conferences. I even have projects available for my non-STEM major students. I currently have a graphic design student working on the project crafting infographics for the LAA.

I love my job at Georgia Highlands, and I cannot imagine doing anything else for a living. I spend my days sharing my love of chemistry with students and watching them find joy in learning.

## Summary of Innovative Teaching Artifacts and Practices

**Semi-Flipped classroom:** I always start my very first lecture of the semester with a question for my students: Would you fly from Atlanta to Los Angeles with a pilot who has just learned to fly using only YouTube videos? Aside from the class jokester, the answer is always absolutely not. We want a pilot with hundreds of hours of flying experience. I use this scenario as a springboard to explain my teaching methods to them. If you're going to learn chemistry, you must do chemistry regularly. I tell them I have hundreds of hours of practice and that it does no one any good for me to stand in front of the classroom and work problems for them. No, they must work the problems themselves to get good at it.

Every lecture begins with a "temperature check" (a quick and fun mental health check) followed by the same question: what did we learn last class? This propels us right into a discussion of the day's learning objectives and how they tie into what we've already learned.

To get them warmed up, I always give a brief, ungraded 3 – 4 question quiz (using Mentimeter which allows anonymous answers) about the previous day's content. These mini-quizzes are similar to the bell work assignments that many remember from high school. The idea is to get them thinking about chemistry and to give a brief review.

Then we go right into a mini-lecture (usually 10 – 15 minutes) to lock in the before-class reading and clear up any misconceptions. The rest of the class is spent in small group work on a variety of learning strategies. I utilize many types of problems and assignments, including Venn diagrams, concept mapping, drawing (great for visual things like the anatomy of an atom), and of course, traditional problem-solving.

**Active learning activities:** I attended a year-long Faculty Learning Community at Kennesaw State University to utilize backward design to create more effective classroom activities and strategies. A sampling of the things I made that year is listed below.

Zombie Apocalypse and The Martian: Dimensional analysis is a topic we spend much time on since it is utilized often throughout both Chemistry I and II, but it is also a topic that students struggle with mightily. I created two fun assignments that are still in use – the Zombie Apocalypse and the Martian. The Zombie Apocalypse is a fun scenario where zombies have taken over, and you must calculate the supplies necessary for you and your team to survive a trek through zombie-infested lands. The Martian is a similar activity, but it is based on the movie/book about a man stranded on Mars who must survive until help arrives. Both activities are fun and bring in that "real world" element.

CSI: Can You Solve the Crime?: This assignment came from an article I read: "Stable Isotope Forensics: From Victims Bones to Matchstick Wood." The report details how isotopic abundance analysis is used in crime-solving. Students are given data on paint chips found at the scene of a crime and from the suspect vehicle and are asked to determine if they are a match. They are then asked to present their evidence to the jury, which includes explaining the concept of isotopic abundance to jurists. The activity reinforces the mathematical process of calculating abundances, reviews percentages, and solidifies their knowledge of atoms and isotopes.

Determination of Density: The concept of density is challenging for my students to visualize and thus really lends itself to hands-on work. I created an activity that gets their hands dirty and incorporates an element of data handling. I have a set of kits that I bring to class on density day. First, we learn about the concept of density, and then they perform simple tests to determine the density of a variety of objects (metal washers, wooden blocks, plastic bolts, and more) using both the water displacement method and the less accurate ruler method. Once students have a handle on the techniques, I give them a set of "silver" rings I purchased on Amazon. Their job is to

determine if I was ripped off or not (spoiler alert: I was ripped off). Finally, the groups share data and perform an analysis of the density data they collected.

Nomenclature Bingo: I believe that memorization is not generally useful, and I don't usually make my students memorize equations or constants. However, I tell them that nomenclature is essential, is used extensively in both chemistries I & II, and it is beneficial to know the formula of a compound from its name without having to look it up. It's the one thing I have them memorize. To help with that process, I created Nomenclature Bingo. It's a fun game that has them go back and forth with determining names from formula and vice versa. I have a fabulous prize box with small things (mostly candy) for them to pick from when they win.

**Teaching Practices:** The majority of my assignments are low-stakes assessments to allow students the opportunity to continue to demonstrate growth and mastery of the content. However, exams are an important way to establish proficiency in the course learning objectives. Each exam (except for my final exam) constitutes 5 percent of the overall grade but seems to generate 95 percent of my student's anxiety. I've noticed there is often a disconnect between perceived effort, and actual grade earned and have instituted various practices to improve grades, mindset, and motivation.

Exam Wrappers: My exam wrappers ask students to reflect on how they prepared for the exam. I ask guided questions about time spent studying, study methods, possible distractions, and whether said strategies were effective. I ask them how they felt going into the exam and how they felt after it was complete. Finally, I ask them how they will change or adapt their strategies for the next exam.

Exam Reflections: On the first exam, I allow them to correct their mistakes for a small amount of credit. As part of the process, I ask them to reflect on why they answered the way they did. This can sometimes help clear up misconceptions about the material that they didn't even realize they had.

My grade is: Surprisingly, I've discovered that many students don't check their grades in the learning management system. I implemented a check-in with my students after each exam. Every student gets a strip of paper with their exam that says "my grade in this class is \_\_\_\_\_" followed by a breakdown of the grade (including lab, homework, quizzes, etc.). At the bottom, it says, "I would like a meeting with you to discuss strategies to improve my grade in your class," with a yes/no check box. I follow this up by meeting with each student who checks yes, and we have a frank conversation about their learning styles, needs, and effective study strategies. I've had multiple students tell me they didn't know how poorly they were doing until they saw it in writing.

### **Criteria One: Evidence of Strong Commitment to Teaching and Learning**

We cannot tell our students how important life-long learning is and not practice life-long learning ourselves. I'm firmly committed to becoming the very best educator that I can be, and I seek out every opportunity to learn and grow in my craft.

Professional Development – Faculty Learning Communities (FLCs): I have attended multiple FLCs during my six years at Georgia Highlands College. I started with our own Faculty Academy, a two-year program run through our Center for Excellence in Teaching and Learning (CETL). We spent our first year becoming familiar with GHC and its students and our second year studying *Small Teaching* by James Lang. I implemented many of the strategies I learned in the FLC in my classes, including course tickets and exam wrappers.

The following year I attended a year-long FLC through KSU focused on backward design and active learning exercises for the classroom. This FLC not only helped me to completely redesign

one of chemistry courses but also gave me the opportunity to collaborate with new people and exposed me to new ideas.

In 2020 I participated in two separate FLCs: the USG "Motivating Learners Course" and a "Student Success" FLC with Professor Billy Morris. The Motivating Learners Course concentrated on the growth mindset in ourselves and our students. We spent a lot of time digging into what growth mindset is and how we foster it in our students. Our goal in the Student Success FLC was to improve student success in online courses. One of our goals was to send personalized messages and outreach to students throughout the entire semester to create a more connected and personal online course. In addition, we specifically wanted to send at least one of these messages during the first week of class, one before the first assessment, and one before the first significant assignment (exam or another major portion of the grade). We tracked DFW rates in the same online courses before the FLC and at the end of the FLC. Many of my colleagues saw significant gains in student success rates. My course had never been taught online before (principles of chemistry) and thus I did not have data on DFW rates for before and after however my DFW rates were in line with my previous face-to-face sections (35%) despite the course being fully online and asynchronous.

Feedback from Billy at the end of the year: As I've reviewed Erin's accomplishments, I've been reminded of the many and varied experiences she has brought to GHC students and shared with colleagues during her time here. I have heard her speak of these in division meetings, small group settings, and one-on-one conversations. In each venue, she relates her experiences to her growth as an educator and as something of value that she can bring to her students and colleagues. It is gratifying and impressive to read about her contributions and learning paths under one cover.

I am currently attending a year-long FLC on High Impact Practices (HIPs) for my Science in Society course. HIPs are a major USG initiative, and I'm working to create a writing-intensive section of one of our non-STEM courses: Science in Society.

Affordable Learning Georgia – Textbook Transformation Grant: In 2017, my colleagues and I were awarded a textbook transformation grant to switch from our paid textbook to a free version. We analyzed the DFW rates at GHC and, via surveys, discovered that many of our students could not purchase the necessary course materials to be successful (textbook, lab manual, homework platform, and calculator), so we immediately began researching more affordable options. In January 2017, we switched to a completely free textbook, OpenStax Chemistry, and a reduced-price homework option via Cengage.

The OpenStax textbook is excellent; however, it doesn't come with the same resources and materials that we are used to in a paid book. We spent the next several years creating ancillary resources, including a library guide with lecture notes, practice problem sets for each chapter, and a set of short videos on a variety of topics. I created a YouTube channel to house our videos and share them publicly. We currently have over 140 videos and 340 subscribers. I've made videos on math review topics, general chemistry, and our chemistry for the health sciences. We created a quiz bank of questions for both semesters of chemistry, and we continue to add questions each semester.

In the four years since we were awarded the grant, we've taken the cost of our general chemistry sequence (CHEM 1211 and 1212) from 300 dollars to under 100 dollars for the entire series. After completing the general chemistry sequence, we turned our attention to survey of chemistry (CHEM 1151 and 1152), and we've finished our switch to a free textbook in that course as well.

Anonymous surveys of our students from before and after the switch indicate that the students like the new textbook. Selected comments from our students:

*"It's important to have open access to textbooks. Coming from an underprivileged family, I can hardly afford college, let alone expensive textbooks, so OpenStax textbooks are a leap in the right direction for me."*

*"It made this semester less stressful because I didn't have to worry about buying another textbook. I wish more classes offered free textbooks."*

*"I love the online textbook. It saves money and is easy to access."*

Further, we've seen a decrease in our DFW rates of at least 10 percent in multiple semesters after switching to the free book.

### **Criteria Two: Use of Effective Teaching Strategies to Enhance Student Learning**

The switch to online teaching of the principles of chemistry sequence was one of the hardest things I've ever done. This course was not designed to be taught online; in fact, multiple USG schools refuse to accept the course as a transfer if the student took it online. I wanted to make sure that my students received the same quality of education as they had in the past when the course was face-to-face.

I employed breakout rooms, active learning problem sets, virtual whiteboards, and Kahoot's to keep them engaged in a distance learning environment. At the end of the semester, I received two Thank a Teacher certificates.

*"Thank you for making this transition to online as smoothly and as easy as it has been. Chemistry was not a class I was expecting to take online or even wanted to take online, but everything you did for us made a big difference and was a huge help." - anonymous.*

*"Professor Erin Shufro has always been there to answer all of my questions THOROUGHLY!!! With me being a full-time online student that was used to being in the classroom, she makes me feel like I am in the literal class because she explains everything so well and tries to make her online students feel a part of the class even though we are from a distance. I hope to have her for Chemistry II. She is great!! Thank you." – Brianna Marsh*

From peer observations of teaching:

*"It was a synchronous class, and the instructor used both the d2l and the zoom platform to deliver the lecture. The instructor is very knowledgeable about both the platform, and the deliverance of the lecture was seamless. The instructor is enthusiastic about what she teaches, uses varied teaching method, and create an effective learning environment in her class." – Assistant Professor of Religion and Philosophy Kencho Tenzin.*

*"The whole class involved active learning by the completion of problem sets. Mrs. Shufro provided an adequate balance in her class to include lecture/demonstration, student work/calculations, and open discussion. She provided positive feedback and helped to guide students through the completion of their problem sets and encourage positivity." – Professor of Biology Sharryse Henderson.*

High Impact Practices (HIPs) have proven to be very effective in the classroom, so much so that the USG has made them a top priority. This year, I joined GHC's HIPs implementation team to add HIPs to my course and help other faculty in their quest to add them as well. I decided to focus on my online Science in Society course. I chose this course for two reasons: one, I felt that it

could use some substantive interaction between faculty and students (a pillar of HIPs!). My second reason was that it is a non-STEM majors' course, and STEM faculty sometimes overlook those courses. There are many HIPs to choose from, and I decided on writing-intensive as my HIP to focus on. I plan to improve my Perusall assignments to be more collaborative and guided. Perusall is a software that allows for smoother discussion boards and has a more familiar feel to students (it resembles Reddit, a social media app that they're comfortable using). It also allows them to comment on media other than articles – I've used it for YouTube videos this semester. I also plan to add multiple mini research papers on current topics of interest (vaccines, GMO's, nuclear energy and more).

### **Criteria 3: Strong Commitment to Fostering Academic Success Outside the Classroom**

Peer-Led Team Learning (PLTL) and Supplemental Instruction: In the spring of 2019, I implemented a Peer-Led Team Learning (PLTL) program on our Cartersville campus. The program employed current students who had completed the principles of chemistry I with at least a B to run recitation sessions with our students. The peer leaders met with me weekly to discuss course content, areas where students may be having the most difficulties, and strategize learning. In 2019, we began to grow the program, including peer leaders for college algebra and principles of chemistry II. Unfortunately, in the spring of 2020, the pandemic caused us to shut down and eventually shift to online learning.

I was concerned with my student's progress and how the switch would affect them. I partnered with some of my faculty to switch to a Supplemental Instruction (SI) Program initially offered 100 percent online via zoom. It quickly became apparent that the switch to SI may have been a blessing disguise. The switch meant that ALL of my students received help, not just those on our Cartersville campus. The switch to online also meant that more of my faculty were willing to run sessions in the evenings and on weekends to match student availability. The following year I partnered with the tutoring center, the writing center, and the library to offer more sessions on various topics. We've covered math, chemistry, biology, physics, writing research papers, citations, sources, and more. Our data shows that students who attend two or more SI sessions in a semester raise their course GPA by an entire letter grade. They are also much more likely to be retained (96 percent vs. 65 percent). The partnership with the tutoring center has allowed me to offer more sessions and market some of them as student-led.

STEM Space: With the return to the classroom, I wanted to focus on student success initiatives in a face-to-face setting this year. I repeatedly heard from my students how intimidating it is to visit a professor in our faculty space (a large room with cubicles) and how they often couldn't visit with faculty because their hours didn't line up. STEM Space is meant to fix both of those issues. It's a student-focused space with multiple study "areas" (math/physics, biology/geology, and chemistry). Each area has a variety of faculty in a variety of time slots. For example, any math student can come in and get help from any of our math faculty on duty. Our generous faculty have donated snacks to the space, and we have a variety of student study aides, including a periodic table, a complete skeleton, a model of the human heart, whiteboards and dry erase markers, scratch paper, and more. While I do not have data on retention or GPA/DFW rates yet, both student and faculty feedback has been very positive. We've helped over 140 students in the first seven weeks it's been open, and some faculty have even added hours to their schedules to accommodate more students.

Lake Allatoona Research Group: For years, I've been told that it wasn't feasible to have a robust research program at a primarily two-year institution. I've heard a million times that by the time a student has learned "enough" science to participate in research, they are ready to graduate. Honestly, I think that's a load of hogwash. While I recognize that my students may never find a

cure for cancer, that doesn't mean they aren't capable of quality, meaningful research even in their first year of college.

Two years ago, I partnered with the Lake Allatoona Association (LAA) to start a water quality research program. My students are split into teams. The first team collects the samples and tests for pH, dissolved oxygen, and conductivity using probes onsite. They make observations about the lake and its surroundings. They keep an accurate field notebook and record all data. They observe proper protocol in the collection of microbiology samples. A second-team tests the lake water for various chemicals, including phosphates, chlorine, sulfates, nitrates, ammonia-nitrogen and more. A third team tests the water for total coliform bacteria and e-coli bacterial levels. We also have a microplastics team (new this semester) working to create a method to test the lake for microplastics and classify any that they find. All group members must present at our bi-weekly group meetings (as part of the HIPs initiative, we've learned that public display of knowledge is an integral part of learning). Each team has a student captain, which allows them to practice their leadership skills and grow within the lab. I also offer formal internships to the bachelor of health science program students at GHC to gain experience in the lab.

I am continually amazed at the level of learning of my students and their enthusiasm for research. The idea to test for microplastics came from one of my students. Another student is very interested in algae and algal blooms and wants to explore methods for testing for those. I accept all students into the program and have even expanded to offer projects to non-STEM students. This semester I have two students interested in research but are looking for projects outside of the traditional lab projects. One of them is a marketing and graphic design student. She is working on creating promotional materials and infographics for the LAA. The other student is a business student who is interested in grant writing. He plans to partner with the LAA to help them write a grant to fund clean-up efforts on the lake. Selected comments from my past and current students:

*"I really wish I had found LARG sooner. I love working with the group, and I'm going to miss y'all when I graduate this spring" – Lauren Black.*

*"I've learned so much in the lab this semester, and I can't wait to join the microplastics team next semester" – Isiah Calhoun.*

*"I was really scared to present to the group the first time but now I want to present at NCUR. I can't believe how much I've changed" – Sydney Bryson*

*"I hope you're doing well and enjoying your summer. I wanted to first thank you personally for adding to my college experience during my first two years at Georgia Highlands College. Graduating high school, some unexpected personal circumstances arose and led me to spend my first two years of college at Georgia Highlands, but I've always believed everything happens for a reason, and after having attended GHC, I wouldn't want to spend my time at another college over GHC, even if I had the chance. I really appreciate all the knowledge and experiences I gained from my all professors, and really appreciate everything you brought me. Thank you!" – Oluwatomisin Adeogun*