



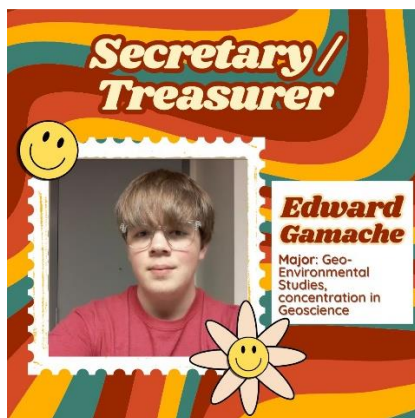
NEWSLETTER

April 2024

Chemistry and Physics Department, Oxendine Science Building – Room 3101, Pembroke, NC 28372
chem_phy@uncp.edu 910/521-6247

UNCP Chemistry & Physics Club

On April 2, officers for the upcoming year were voted on and elected.



UNCP Chemistry & Physics Club

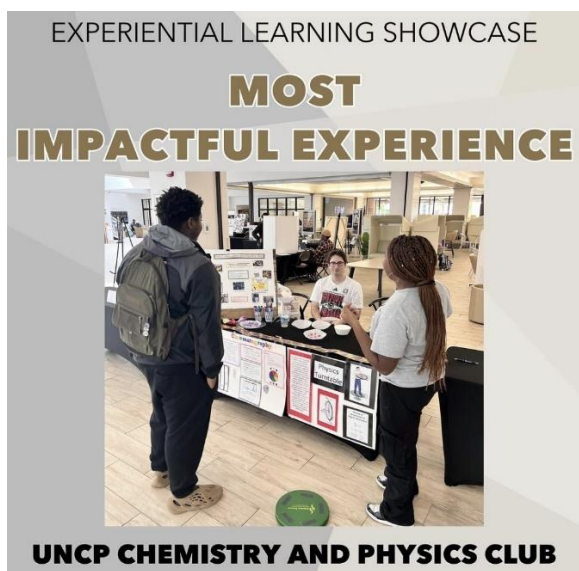
At the Center for Student Success Awards on April 9th, several tutors from the Chemistry and Physics Department were recognized for their work with CSS as peer tutors. Graduating seniors were awarded a graduation cord for their time as CSS employees. Additionally, Kae Burns received the "Student of the Year Award" and Keirah-Lee Garry received the "Collaborative Success Award".

At the PURC symposium on April 10th, Tiffani Roberts was the recipient of the "Undergraduate Travel Research Award".

Congratulations, ladies. Great job!



The Experimental Learning Showcase event was held on April 11th, hosted by CCE. This was a wonderful opportunity for the club to engage with students, providing both chromatography and angular momentum activities. We are honored to have been voted "most impactful experience"!





UNCP Chemistry & Physics Club

The Festival at Old Main on April 13th, the club invited people of all ages to try the Physics Turntable or make a chromatography flower out of coffee filters, water, and washable marker. Each flower was friendly and carefully placed on a board to spell out "BRaVEs", a series of 4 element abbreviations.




UNCP Chemistry & Physics Club

Speaker Event: April 16, 2024 Oxendine Science Building Room 3202 at 3:30 p.m.

Lorette M. DeVault - Microchemist from the Treasury

The involvement of women & minorities in STEM and opportunities for them to join in various STEM related fields.

Lorette M. DeVault



Title:

- Senior Scientist in the Government

Opportunities:

- Information on government and industrial work relating to aspects of STEM.

Background:

- B.S. Biotechnology, Chemistry Minor (Fayetteville State University)
- M.S. Management/ Project Management (University of Maryland Global Campus)

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The club was joined by Ms. Lorette DeVault, a scientist employed by the US government. With a bachelor's in biochemistry, she spoke on both opportunities for employment in public and private sectors. She also walked students through resume writing and gave tips for job searching.

Q&A

Question: A piece of advice to undergrad students who might be interested in following a similar path to you

Answer: "Follow your passion and enjoy the journey. While you are here doubting yourself, others are looking up to you as a role model, so show up and do your best".



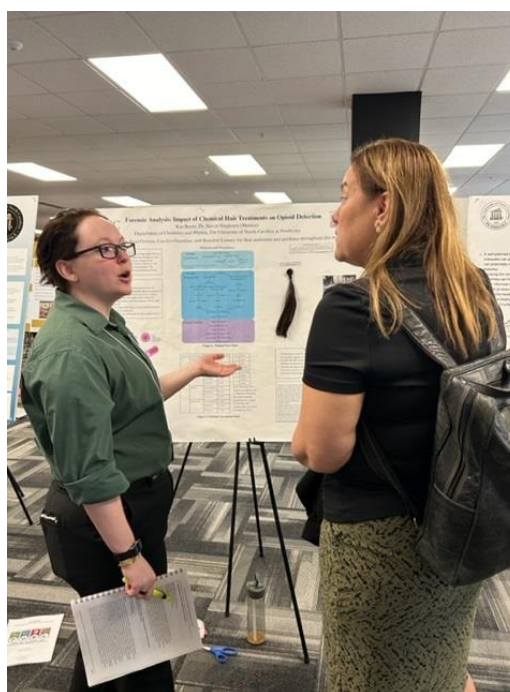
THE UNIVERSITY OF NORTH CAROLINA AT PEMBROKE

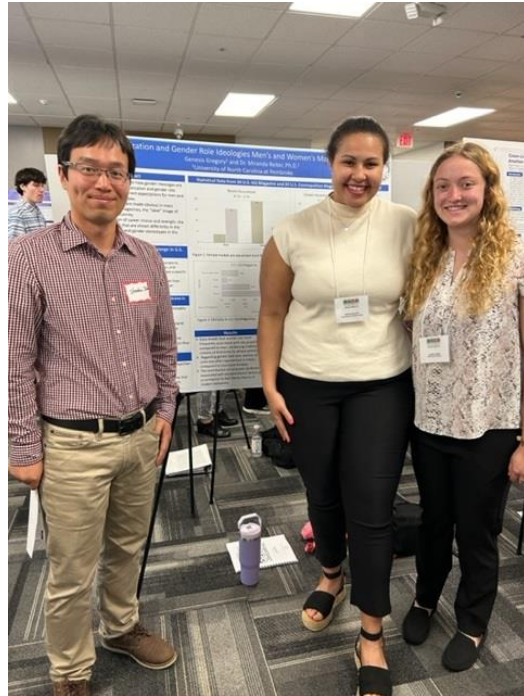
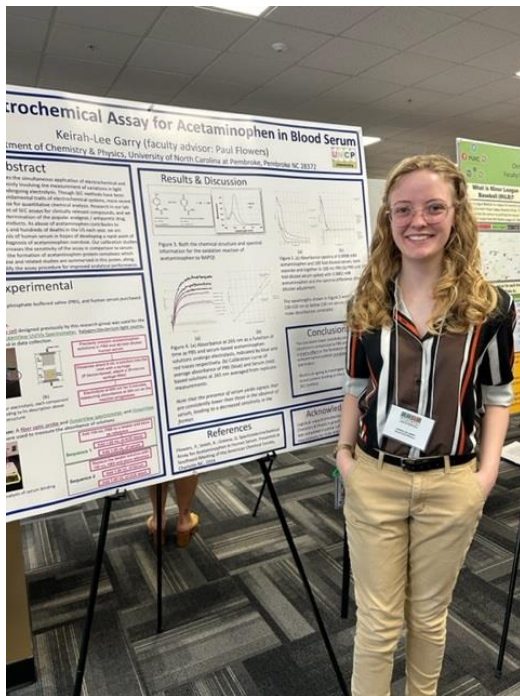


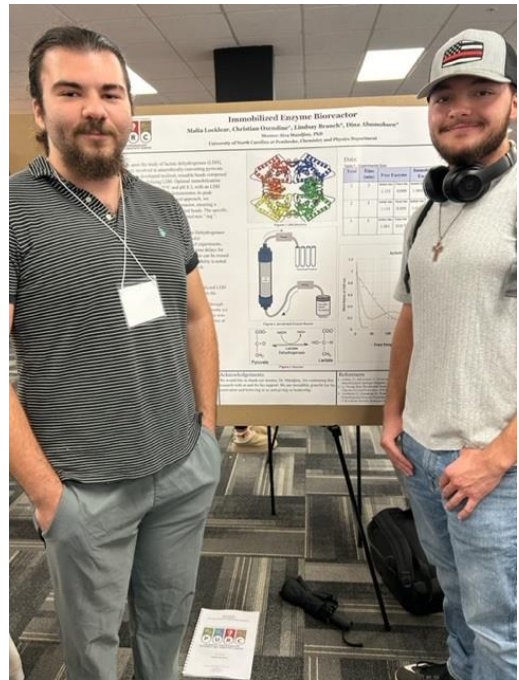
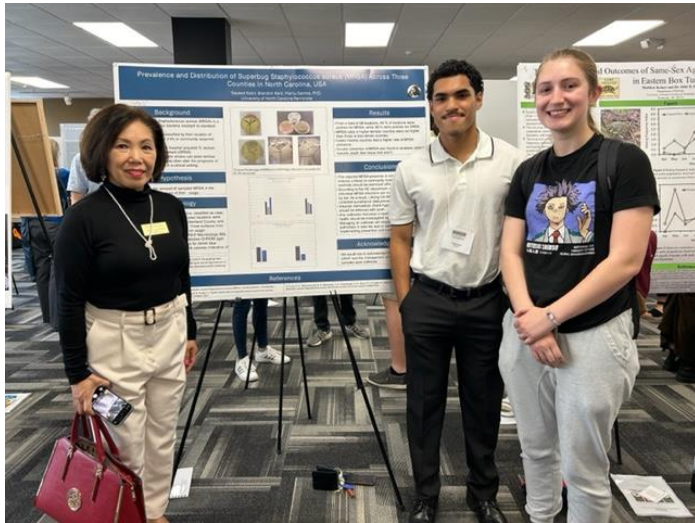
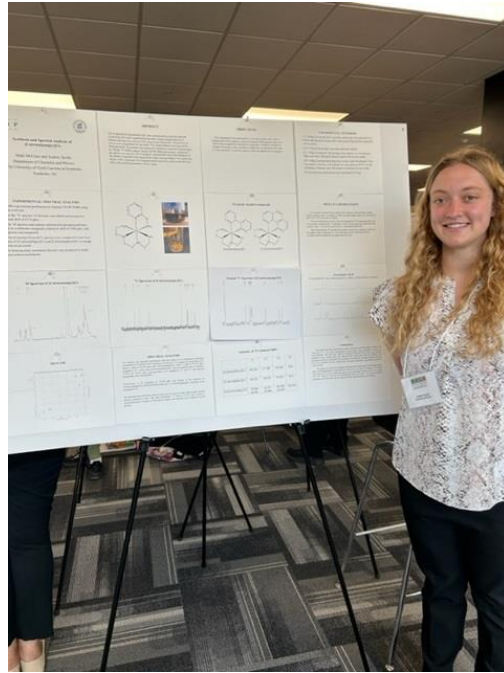
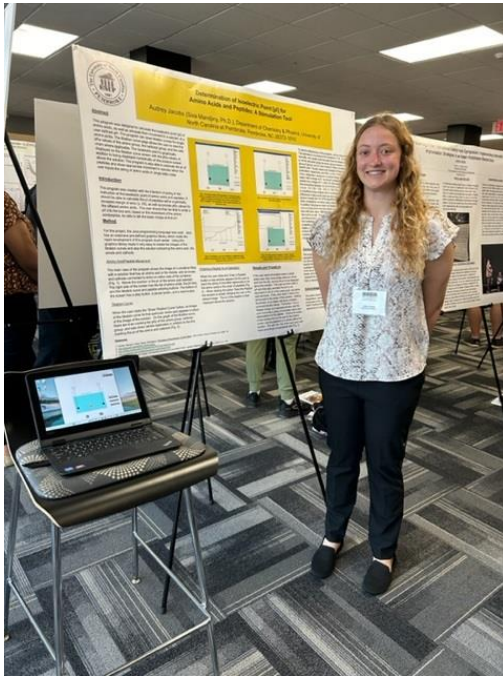
PEMBROKE UNDERGRADUATE RESEARCH AND CREATIVITY CENTER

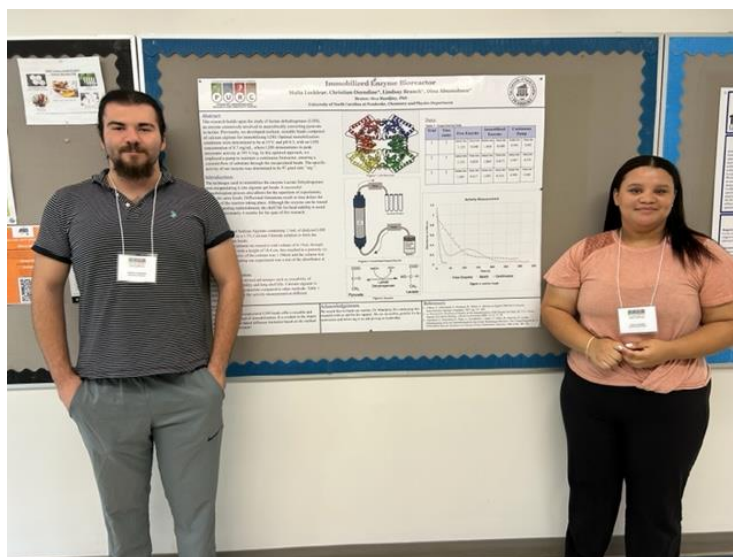
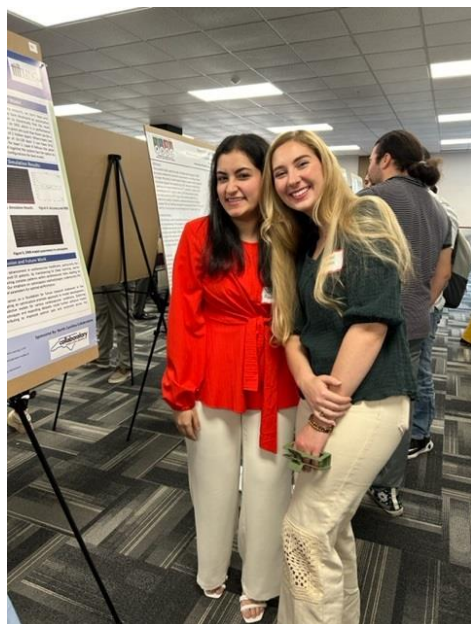
The 18th Annual Pembroke Undergraduate Research and Creativity Symposium was held Wednesday, April 10th from 10:00am to 2:20 pm in the Common area and Reading Room of the Mary Livermore Library. This event included 130 presentations of scholarly ventures by approximately 180 students and 67 faculty mentors, representing 18 academic departments. This year's Keynote Speaker was Dr. Jennifer Gerz-Escandón, Associate Vice President for Academic Programs & Research for the University of North Carolina System. The Keynote was followed by musical performances, poster/exhibit sessions and a poetry reading. The event concluded with an awards ceremony at 12:55 pm. Everyone was welcome to join in celebrating this year's achievements in the undergraduate research.

A special "thanks" to all the mentors who worked tirelessly with the students for their progress. The mentors are **Sally Vallabha** (Council Member), **Paul Flowers**, **Steven Singletary**, **Cornelia Tirla**, **Bill Brandon**, **Tikaram Neupane**, **Mark McClure**, **Uma Poudyal**, **Benjamin Killian**, **Ben Bahr**, and **Siva Mandjiny**.









Development and Implementation of Technologies for Plastic Recycling

Dominick Burgess, Chemistry & Physics

Mentor: Cornelia Tirla

Forensic Analysis: Impact of Chemical Hair Treatments on Opioid Detection

Kae Burns, Chemistry & Physics

Mentor: Steven Singletary

Implementation of the BB84 Keypad Protocol Using Excel

Aiden Crabill, *Chemistry & Physics*

Mace Garza Velarde, *Chemistry & Physics*

Daniel Smith, *Chemistry & Physics*

Kaceion Williams, *Chemistry & Physics*

Mentor: **William Brandon**

Analytical Study of Phase Modulation in Semiconductor via Spatial Self-Phase modulation

Riley Edwards, *Chemistry & Physics*

Mentor: **Tikaram Neupane**

Spectroelectrochemical Assay for Acetaminophen in Blood Serum

Keirah-Lee Garry, *Chemistry & Physics*

Mentor: **Paul Flowers**

Synthesis and Spectral Analysis of [Co(trien)(ampy)]Cl₃

Audrey Jacobs, *Chemistry & Physics*

Mentor: **Mark McClure**

Determination of Isoelectric Point [pI] for Amino Acids and Peptides: A Stimulation Tool

Audrey Jacobs, *Chemistry & Physics*

Mentor: **Siva Mandjiny**

Preliminary Study on Dual-Phase Polarimeter with Wollaston Prism

Nicolas Kincaid, *Chemistry & Physics*

Francisco Pedroza-Rojas, *Chemistry & Physics*

Mentor: **William Brandon, Tikaram Neupane**

Spectroelectrochemistry on a Shoestring

Malia Locklear, *Chemistry & Physics*

Mentor: **Paul Flowers**

Compressive Strength of 3d Printed Parts

Psi Lupton, *Chemistry & Physics*

Mentor: **Steven Singletary**

Concise Method to Determine Planck's Constant Using LED's: The "Electrophoto Effect"

Jordan Morgan, *Chemistry & Physics*

Mentor: **William Brandon**

Immobilized Enzyme Bioreactor

Christian Oxendine, *Chemistry & Physics*

Malia Locklear, *Chemistry & Physics*

Lindsay Branch, *Biology*
Dina Abumohsen, *Biology*
Mentor: **Siva Mandjiny**

The Optical Properties of Quantum Dots
Francisco Pedroza-Rojs, *Chemistry & Physics*
Nicolas Kincaid, *Chemistry & Physics*
Mentor: **Tikaram Neupane**

Pulse Laser Plasma Diagnostics
Francisco Pedroza-Rojs, *Chemistry & Physics*
Nicolas Kincaid, *Chemistry & Physics*
Mentor: **William Brandon**

Evaluation of Liquid Crystal Variable Retarder (LCVR)
Daniel Smith, *Chemistry & Physics*
Mentor: **William Brandon, Uma Poudyal**

A Theoretical Perspective on Dark Matter (Presentation 1) & Tardigrades & Panspermia (Presentation 2)
Fallon Taylor, *Chemistry & Physics*
Mentor: **Benjamin Killian, Jerry Griffith**

Computation Study of Spatial Self-Phase Modulation In Semiconductor
Xander Vasquez Amores, *Chemistry & Physics*
Mentor: **Tikaram Neupane**

Using Molecular Dynamic Simulations to Examine Molecular Behaviors of Biomass Derivatives
Kimberly Yard, *Chemistry & Physics*
Mentor: **Sivanadane Mandjiny**

Dietary Dupplementation in Middle-aged Rats Evaluated Across Behavioral, Synaptic, and Proteomic Measures
Kinsley Adams, *Biology*
Zachary Powell, *Biology*
Mykayla Greene, *Chemistry & Physics*
Reece Hicks, *Chemistry & Physics*
Mentor: **Ben Bahr**

Introduction to Engineering Design projects
Kendall Chavis, *Chemistry & Physics*
Joseph Cimadamore, *Chemistry & Physics*
Aiden Crabill, *Chemistry & Physics*
Riley Edwards, *Chemistry & Physics*
Micah Ferguson, *Chemistry & Physics*

Jose Garcia Vergara, *Chemistry & Physics*
Gavin Hardison, *Chemistry & Physics*
Christopher Holmes, *Chemistry & Physics*
Seth Hunt, *Chemistry & Physics*
Nicolas Kincaid, *Chemistry & Physics*
Seth Lowery, *Chemistry & Physics*
Arturo Mendoza-castillo, *Chemistry & Physics*
Allyson Tedder, *Chemistry & Physics*
Xander Vasquez Amores, *Chemistry & Physics*
Christina Wilson, *Chemistry & Physics*
Mentor: **Steven Singletary**

Woodcutting: An Outlet for Creativity
Sean Musselwhite, *Art/Chemistry & Physics*
Mentor: **Brandon Sanderson**

Dr. Timothy M. Ritter & Marie A. Amero Endowed Research Scholarship
MyKayla Greene, *Chemistry & Physics*

Open House and Accepted Student Day

The Open House and Accepted Students Day event was April 13, 2024, with nearly 400 guests. The day consist of many campus activities as it also included the Festival of Old Main and a joint FAFSA Day with our local education partner Robeson Community College.

The committed participants for the Open House Academic and Resource Fair was set up on Faculty Row near the water feature and University Quad area. The future Braves and their guests were able to visit the fair as well as enjoy the Festival of Old Main which was hosted by Student Affairs.

The hospitality, campus pride, and passion-filled expertise makes UNCP special and are often touted as the reason why students choose UNC Pembroke.

Open House is a fantastic opportunity to showcase our university, programs, and campus culture to future members of our academic community. We encourage you to engage with prospective students, share your experiences, and provide valuable insights into your respective departments and programs. Thank you, Dr. Mandjiny, Dr. Neupane, and Dr. Poudyal, for playing an important role in recruiting and welcoming potential Braves to campus, sharing your experiences, and providing valuable insights into the department and programs. We appreciate your involvement and thank you for what you do to put students first.



Siva Mandjiny, Ph.D.
Professor and Chair



Tikaram Neupane, Ph.D.
Assistant Professor of Physics



Dr. Uma Poudyal, Ph.D.
Assistant Professor of Physics

UNCP Rocket Team - NASA USLI Competition

The rocket team left Wednesday April 10 - 14, for their first competition in Alabama. They competed in NASA's Undergraduate Student Launch Initiative. Throughout the academic year, the team has been building and testing their rocket, submitting design reports to NASA, attending briefings with NASA engineers to explain their progress and plans for further work – all while taking care of their normal day to day class/school activity. They have passed all the mile-stone reviews and the email from NASA last Friday, April 7, told us “The UNCP Rocket Team is go for launch in Huntsville”. NASA will be live streaming launch day activities on Saturday, April 15, on the USLI face book page and the Marshall Space Flight Center YouTube channel.

Dr. Steven Singletary “thanks to all of you for your support this year and if you see a team member, please give them a high five or a well done – they’ve earned it this year regardless of the outcome of the competition”.

UNCP now has a lot more friends and supporters in the rocket world that look forward to seeing us back and the returning team members are highly motivated to go back. Thanks to all of you for your support and encouragement. Now on to Wisconsin and the First Nations Launch Competition! Congratulations to Dr. Steven Singletary and his student team on a successful launch!



The UNCP Rocket Team has been selected to compete in the NASA Student Launch Challenge in Alabama in April 2024

Gray's Creek Middle School STEM Night – Hope Mills, NC



Dr. Siva Mandjiny and Sayeed Kabir participated at Gray's Creek Middle School STEM night on Tuesday, April 23. The activity will be titled "Chemistry Fun Activities", and it aims to ignite curiosity about electricity and introduce basic acid-base chemistry concepts to beginners in STEM, particularly in Chemical Sciences. Students had the opportunity to engage in hands-on activities and demonstrations. Dr. Mandjiny was thrilled to be part of such an engaging event. Thank you, Dr. Mandjiny and Sayeed, for your valuable contributions to the event.



UNCP Chemistry & Physics Club

UNCP Mock Trial - Open to all students



Are you interested in court processes and how its science and the justice system intersect? UNCP Pre-Law Society is hosting its first mock trial on Thursday, April 18th from 5-7 pm in the Auditorium of James Thomas Hall. Please join them in the audience to view the trial. It is a robbery case where student attorneys will go head-to-head to compete to win over a jury. Several of your Chemistry and Physics Department and Maynor Honors College peers will act as expert witnesses, jurors, and audience members, so feel free to support this event by attending as an audience member.

Academic Awards Day

The 2024 Chemistry and Physics Academic Awards Day Program was held April 18, 2024, in room SCI 3256. The department had 14 winning students for awards.

This year's recipients are:

Keirah-Lee Garry	American Institute of Chemists Outstanding Senior Award
Tiffani Roberts	Professional Promise Award
Hannah Leviner	Continuing in Chemistry Award
Kae Burns	ACS Sponsored Award in Analytical Chemistry
Audrey Jacobs	ACS Sponsored Award in Inorganic Chemistry
Dominick Burgess	ACS Sponsored Award in Organic Chemistry
Kae Burns	ACS Physical Chemistry Undergraduate Award
Carina Fiorucci	CRC Freshman Chemistry Award
Dominick Burgess	Undergraduate Research Award in Chemistry
Jordan Morgan	Undergraduate Research Award in Physics
Aiden Douglas Crabill	Outstanding Pre-Engineering Student Award
Tristan Peter Dwyer	Einstein Achievement Award in Physics
Nicolas Kincaid	"3+2" Student Award
Francisco J. Pedroza	"3+2" Student Award

Congratulations, students, on your recognition and award!



Keirah-Lee Garry and Dr. Siva Mandjiny



Tiffani Roberts and Ms. Sally Vallabha



Hannah Leviner and Dr. Benjamin Killian



Dr. Steven Singletary presenting
for Carina Fiorucci



Audrey Jacobs and Dr. Mark McClure



Kae Burns and Dr. Roland Stout



Kae Burns and Dr. Paul Flowers



Dr. Cornelia Tirla presenting for Dominick Burgess



Dr. Bill Brandon presenting for Jordan Morgan



Tristan Peter Dwyer and Dr. Bill Brandon



Dr. Bill Brandon presenting for Aiden Douglas Crabill



Nicolas Kincaid, Dr. Bill Brandon, and Francisco J. Pedroza



Awardees standing: Tristan Dwyer, Francisco Pedroza, Nicolas Kincaid, Keirah-Lee Garry, and Tiffani Roberts
Awardees kneeling: Audrey Jacobs, Kae Burns, and Hannah Leviner



On behalf of the department, the Faculty and Staff would like to thank the following faculty and staff members for the execution of the departmental awards day ceremony. It went extremely well.

1. Dr. Rachel Smith took complete initiative and work countless hours to get all the awards together which includes working with all the faculty and staff members, students, and their family members. Rachel, thank you for making this ceremony happen with a great success and all you do for this department. You are greatly appreciated.
2. Mrs. Hope Bullock worked very closely with Dr. Smith to make everything happen. Faculty and students love it.
3. Thank you, Dr. Mark McClure, for taking nice pictures of the whole event.
4. Mrs. Carolyn Oxendine and Mrs. Hope Bullock worked together in organizing a nice party. The punch, fruit, cheese and crackers, and vegetable trays was great. Thank you! Job well done.

Dr. Mandjiny stated "It was so nice to see everyone together with the students on this great "Departmental Award Ceremony" occasion. I am highly impressed to see that you gave the awards to your students with enthusiasm and with a great smile. It was so nice to see that. The department is so proud of you all to work with them for preparing them for their future and for their success".

Gamma Sigma Epsilon Induction Ceremony: Thursday, April 18 - Reception at 4 pm in SCI 3202, Ceremony at 4:30 pm in SCI 3256



The Gamma Sigma Epsilon Chemistry Honor Society recently inducted new members at UNC Pembroke.

The students for 2024 are **Autumn Bryant, Jasmin Carballido, MyKayla Greene, Reece Hicks, Kyra Locklear, Malia Locklear, London Love, Kegan McDonald, Neveah Roverato, Alexis Strickland, Mercedes Yannick, and Anastasia Zakharova.**

Congratulations to each of you.

Since April 2004, this marks the 20th year of the Gamma Sigma Epsilon Chemistry Honor Society at UNCP with a total of 148 students. Gamma Sigma Epsilon is a national chemistry honor society founded in 1919 at Davidson College. The original fraternity was established to promote academic excellence and undergraduate research scholarship in chemistry. In 1921, the fraternity became co-ed and transformed into an honor society. Today, there are more than 70 active chapters across the country.

Congratulations to each of you. Thank you, Dr. Smith, for the preparation of this special event for the department and our students and for your inspiration to our students.



Dr. Rachel Smith and Autumn Bryant



Dr. Smith and Jasmin Carbalido



MyKayla Greene and Dr. Smith



Reece Hicks and Dr. Smith



Dr. Smith and Kyra Locklear



Dr. Smith and Malia Locklear



Dr. Smith and Kegan McDonald



Dr. Smith and Neveah Roverato



Dr. Smith and Alexis Strickland



Dr. Smith and Mercedes Yannick



Tiffani Roberts, Dr. Rachel Smith, and Kae Burns



Tiffani Roberts, Dr. Smith, and Mercedes Yannick



Tiffani Roberts, Keirah-Lee Garry, and Dr. Smith



Dr. Rachel Smith, Gamma Sigma Epsilon Officers, and Inductees



Dr. Rachel Smith, Gamma Sigma Epsilon Officers, and Dr. Paul Flowers

Chemistry and Physics Graduate Social

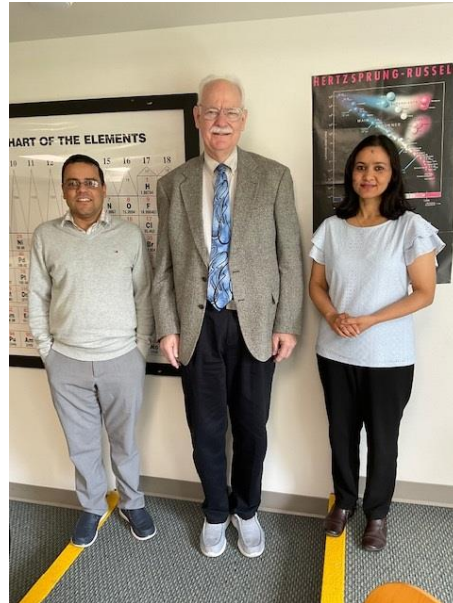
The 2024 Spring Graduate Social was April 26, 2024. It was a great turn out with students, faculty, and staff. Everyone enjoyed the good fellowship and great food. The “Grilled Salmon fillet, Shrimp Scampi, Garlic Roasted Green Beans, Grits with Cheese, Mandarin Orange Spinach Salad, Italian Dressing, Lemon Vinaigrette, Balsamic Broccoli Pasta Salad, Plain New York Cheesecake, Sweet Iced Tea, and Strawberry Lemonade” was served for lunch and catered by Sodexo.

The graduates for this semester were **Kae Dawn Burns, Juan Manuel Carrillo, Madison Elizabeth Deese, Keirah-Lee Marie Garry, Audrey Jacobs, William Ridge Leviner, Malia S. Locklear, London Jasiah Love, Sara Elizabeth Ormsby, Zachary Quinn Reed, James N. Revels, Tiffani Jordan Roberts, Avery Walker, Tristan Peter Dwyer, Mace Steven Garza Velarde, Kyle Eli Graham, Jordan Morgan, and Kaceion M. Williams.**

Congratulations to our graduates. Job well done!









DR. ROLAND STOUT



On April 26, the department host a retirement reception for Dr. Roland P. Stout. He will retire from the University on June 30. It was an enjoyable time to spend with him, his wife, daughters, and granddaughter, Winter. It was very meaningful and a special time for Dr. Stout and his family and everyone who attended. We wish you well, Dr. Stout. Come and visit with us anytime.





UNCP Rocket Team - “First Nations Launch Competition”

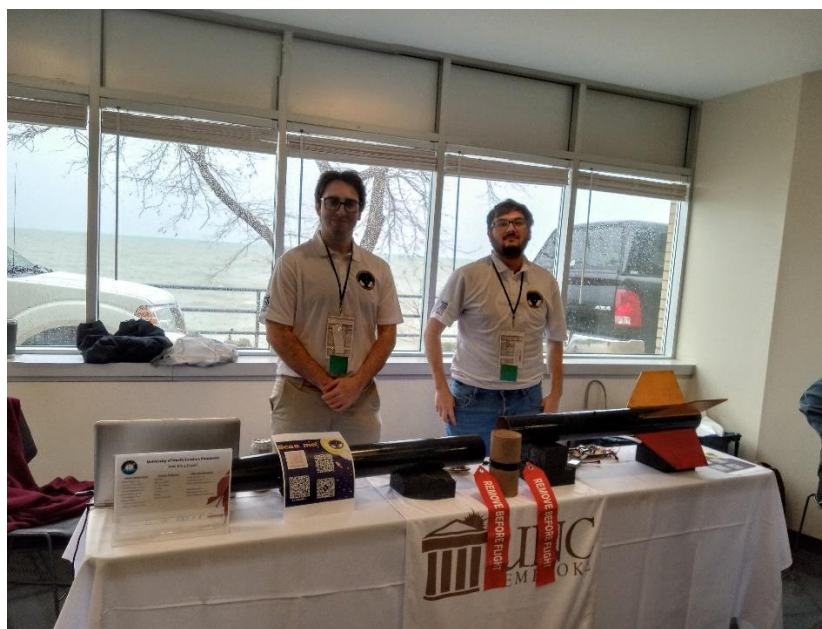
Dr. Steven Singletary and the Rocket Team traveled to Kenosha, Wisconsin for the rocket launch competition April 27 – 30, 2024. The team did their presentations to the judges. They were quizzed by the judges on the construction of their rocket, how the altimeter works, how the parachute will get deployed and on total safety procedures. Special “thanks” to Dr. Singletary for his achievement in sending our UNCP’s rocket in the outer orbit. Hope their adventure continues forever. We are so proud of both the faculty and the students.

Just a quick note on how this year’s competition went. The task this year was to build a high-powered rocket completely from scratch based on one of three kits. The team with the lightest rocket compared to their chosen kit has the inside track to win. We will learn the competition winner by June 1.

The team had a successful launch with a nominal flight. All events occurred as programmed/needed and the team recovered the rocket, and it is ready to fly again.

As we wait for word on who the overall competition winner is, the team and I would like to thank each of you for your support and encouragement over the past year. It has been greatly appreciated.

Congratulations to Dr. Singletary and all the team members for a job well done. It is so amazing to see your and the students’ effort. *(Photos and video to come later.)*



Rocket Team Members: Daniel Smith and Jacob Catanzarite

UNCP Chemistry & Physics Club



The Chemistry and Physics Club deals with youth outreach related to STEM. Members of the Club do things like science fairs and youth outreach throughout middle schools and high schools. They also seek out professional and academic post-graduate opportunities through speakers and graduate school tours.

Congratulations on the 2023 – 2024 Student Leadership Award!



Chemistry & Physics Club Members

Students News

Kae Burns: job with state or federal government as a forensic technician/analyst with desire to go to graduate school.

Malia Locklear: graduate school at Campbell University in Pharmacy (pharmaceutical research)

Audrey Jacobs: Wake Forest University or UNC Chapel Hill; master's in public health

William Ridge Leviner: working for a biotechnology company.

Mace Steven Garza Velarde: attending UNC Charlotte; Automotive Engineering

Tiffani Roberts: waiting on offer from post-baccalaureate (post-bac) programs in neuroscience which will help assist in getting into a Ph.D. program.



We are so proud of our students.