ELIZABETH CITY STATE UNIVERSITY

UNDERGRADUATE RESEARCH WEEK 2021

SOAR

ECSU Undergraduate Research Week website:

click here ▶ https://ecsurw.wixsite.com/rw2021

#ecsurw21

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

RESEARCH WEEK COMMITTEE

Dr. Margaret Young- Chair: Director of Undergraduate Research
Dr. Melinda Anderson - Co-Chair: Associate Vice Chancellor of Academic Affairs
Dr. A. Victor Adedeji: Nat Sci
Dr. Jennifer Brown: Health & Human Stud
Dr. Tina Craddock: Humanities & Soc Sci
Dr. Malcom Dcosta: Math, Comp Sci & Tech
Ms. Annmarie Delgado: Sponsored Programs
Ms. Shatoya Covert: Math, Comp Sci & Tech
Dr. James Goar: English & Digital Media
Dr. Tim Goodale: Graduate Ed
Dr. Colby Hunter: Nat Sci
Dr. Krishna Kulkarni: Math, Comp Sci & Tech
Dr. Lloyd Mitchell: Health & Human Stud
Dr. Andre Stevenson: Health & Human Stud
Mr. Elton Stone: Av Sci & EM Mgmt
Mr. John Stiles: Vis & Perf Arts
Dr. Kunpo Tao: Bus, Acct & Sport Mgmt
Dr. Jingbin Wang: Soc Sci

ECSU'S UNDERGRADUATE RESEARCH WEEK

"GETTING TO KNOW THE NATIONAL SCIENCE FOUNDATION: AN AGENCY OVERVIEW AND FUNDING OPPORTUNITIES"

ECSU'S OFFICE OF SPONSORED PROGRAMS INVITES YOU TO ATTEND THIS FIRST WORKSHOP IN A SERIES OF INTERACTIVE NATIONAL SCIENCE FOUNDATION (NSF) GRANT DEVELOPMENT WORKSHOPS

REGISTER TODAY – VIRTUAL EVENT!

HTTPS://WWW.EVENTBRITE.COM/E/GETTING-TO-KNOW-THE-NATIONAL-SCIENCE-FOUNDATION-AN-AGENCY-OVERVIEW-TICKETS-147152195177

DR. CLAUDIA RANKINS

Dr. Claudia Rankins is a senior research associate for PRISSEM Academic Services, LLC, where she conducts faculty development and research development consulting activities, specifically aimed towards faculty at HBCUs pursuing NSF funding in STEM and STEM education fields. She recently retired from the NSF where she served as a Program Director in the Directorate for Education and Human Resources.

Monday, April 12th
1:00 – 2:00 PM

Register Today at EventBrite!

Dr. Rankins will give an introduction to the National Science Foundation (NSF) from the perspective of a long-time program director. In this workshop, she will discuss the structure of NSF, give an overview of funding opportunities, and describe how NSF solicits, receives, and reviews proposals. The NSF funding landscape of HBCUs will be presented.

OFFICE OF SPONSORED PROGRAMS
Rm 100 McLendon Hall

www.ecsu.edu/osp

All faculty, staff, and students are welcome to attend!

ELIZABETH CITY STATE UNIVERSITY
1891

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

PLENARY SPEAKER

DR. CHRISTINE BRADISH

THE SMELL OF SUCCESS: NORTHEAST NC'S LOCAL INDUSTRY AND ITS REACH ON THE GLOBAL FRAGRANCE INDUSTRY

Dr. Christine Bradish is a Plant Breeder at Ashland/Avoca LLC in Bertie County, where she has been working since 2017. Her research program focuses on yield improvement of a key compound in clary sage for the fragrance industry, in addition to standard agronomic traits. Previously she worked with berry crops and animal models.

Christine is passionate about agriculture and education, and has mentored, taught and given talks to students and garden groups at all levels. She blogs for and chairs the science communication committee for the Crop Science Society of America, and is a Certified Crop Advisor.

Christine completed her M.S. and Ph.D. in Horticulture at NC State University and B.S. in Biology at Old Dominion University.

Monday, April 12, 2021

5:00 p.m.

Zoom Link:
https://ecsu.zoom.us/j/97353296176?pwd=aXNKcjd4ZFhTRWRTVVp4eE9jRkV5QT09

ECSU
ELIZABETH CITY STATE UNIVERSITY
FOUNDED 1891

REVEALING PLANTS
Seminar Series

in conjunction with

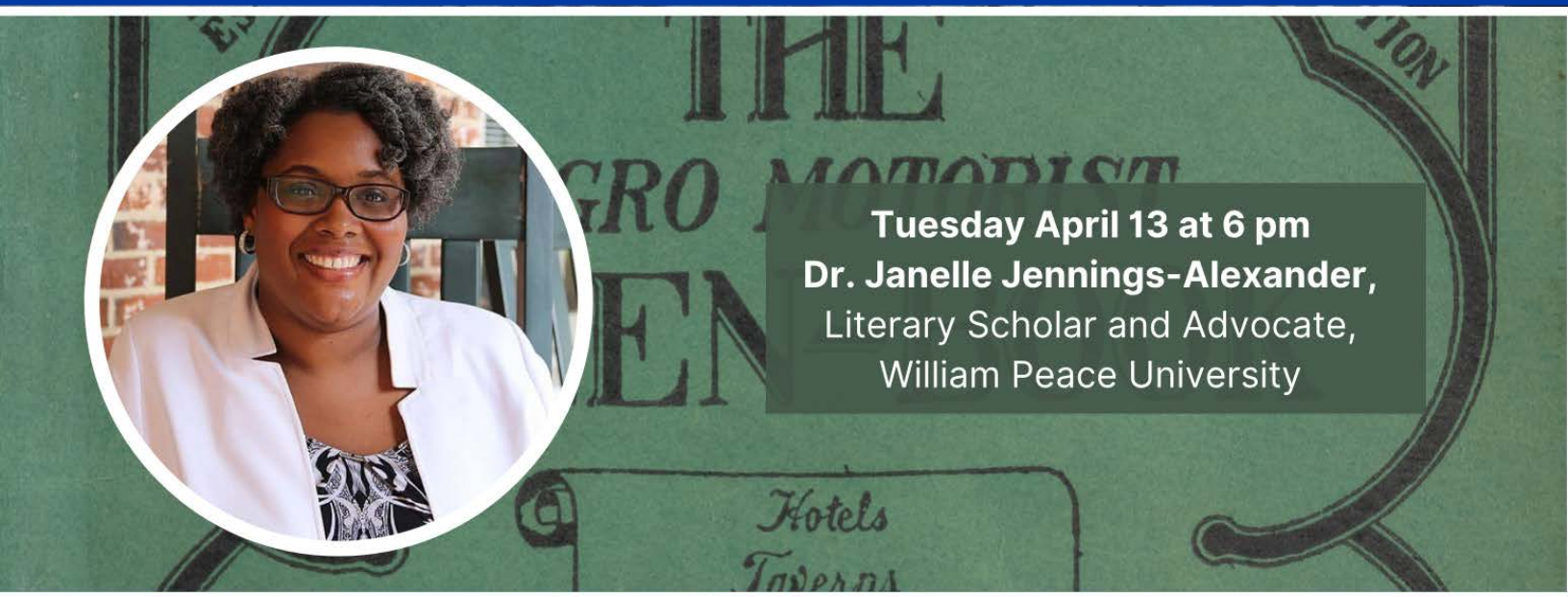
2021 SOAR

Dr. Christine Bradish
Plant Breeder at Ashland/Avoca LLC in Bertie County, NC

NSF
Sponsored by NSF TIP Grant #1912192

HERSTORY

Conversations with Women in the Humanities



Tuesday April 13 at 6 pm
Dr. Janelle Jennings-Alexander,
Literary Scholar and Advocate,
William Peace University

Dr. Jennings-Alexander (William Peace University) will share her experiences as a Humanities scholar, teacher, and activist, including reflections on African-American literature, anti-racist pedagogy, and the Raleigh Green Book Project. She will also discuss the importance of the Humanities at HBCUs and answer student questions.

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

FRIDAY, APRIL 16, 2021 • 12:00PM

GUEST SPEAKERS

Mr. Bryce Ahart and Ms. Stephanie McFarlane are both graduates of NYU Tisch School of the Arts where they each graduated Cum Laude from the Dramatic Writing Department. During their senior year, they were two out of eight writers selected for the 2017-2018 HBOAccess Writer's Fellowship where their script, Sterling, was selected to be produced through the program. Sterling went on to premiere at SXSW Film Festival and HBOMAX. After the fellowship, Bryce and Stephanie staffed on The CW's Legacies where they wrote and produced two episodes. Most recently, they completed staffing on the first season of Netflix's First Kill."

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

SCHEDULE OF EVENTS

MONDAY, APRIL 12, 2021
EDUCATION AND SOCIAL SCIENCES DAY

• Assisting Public School Districts: Meeting School Improvement Plan Goals Through Research Based Projects
Presenter: Lyla Hanig

• Family Engagement Using Researched Practices
Presenter: Iesha Boone

• Parent and Family Involvement: Research Based Practices
Presenters: Beverly Rooks-Hockaday and Waynetta Shabazz
3:00 – 4:00 pm:
Presiding: Drs. Cheryl Luton, Jannifer Sykes, Shelia H. Williams

• Old Oak Grove Cemetery, Historical Significance and Preservation Efforts: A Report from the Field
4:00 – 5:00 pm:
Presenters: Dr. Latif Tarik, Session Chair; Aaron Wrighton, Veronica Downing, Westry Thorpe, Barry Ward
Presiding: Dr. Melissa N. Stuckey

Plenary Speaker
• The Smell of Success: Northeast NC's local industry and its reach on the global fragrance industry
5:00 – 6:00 pm:
Presenter: Dr. Christine Bradish, AVOCA Farms, NC
Presiding: Dr. Margaret Young
(in association with RevealingPlants Seminar Series)

TUESDAY APRIL 13, 2021
STEM DAY

• Opportunities for Graduate Study in Biology and $20,000.00 Scholarships
2:00- 3:00 pm:
Presenters: Dr. Timothy Goodale, Graduate Education, and Dr. Hirendranath Banerjee, Biological Sciences
Presiding: Dr. Xiaoli Yuan

• Investigating evidence of recent comet or asteroid impacts
2:00-3:00:
Presenters: Drs. Malcolm LeCompte (ECSU), Christopher Moore (University of South Carolina), Allen West (Comet Research Group, Arizona) and Timothy Witwer (retired MD, Elizabeth City)
Presiding: A. Victor Adedeji

• Team work in Aviation and Emergency Management: Saving lives
Place: STEM/Pharmacy Complex Parking Lot
1:00 pm:
Presiding: Dr. Kevin Kupietz, Program Coordinator EM, and Mr. Elton Stone, UAS
(Pre-recorded Link will be available on Wednesday, April 14, 2021 at 11:00 am: Zoom Link)

SPECIAL EVENT
• HerStory: Conversations with Women in the Humanities
6:00 – 7:00 pm
Register at: https://tinyurl.com/ecsu.humanities
Presenter: Dr. Janelle Jennings-Alexander, Williams Peace University
Presiding: Drs. Charles Reed and Adam McKee

WEDNESDAY APRIL 14, 2021
BUSINESS AND ECONOMICS DAY

• Marketing Research: The drivers of the growing market of wearable devices
10:00 –10:25 am:
Presenter: Teirra Pettway
Presiding: Dr. Kungpo Tao

• Marketing Research: Consumers' fundamental shifts to online activities during the pandemic
10:30 – 10:55 am:
Presenter: Taliyah Griffin
Presiding: Dr. Kungpo Tao

• [ECSU Basketball] Started from the Bottom, Now we here
11:00 –11:55am:
Presenters: Jarrod Borders and Talissa Spruill
Presiding: Dr. Namhun Lim

• Accounting Research Forum
1:00 – 1:55 pm:
Presenters: Elizabeth Barry, Secret Webb, and Katria Beaty
Presiding: Dr. Xiaoli Yuan
Community Health

•Mental Health Associated with Natural Catastrophes in the Communities around Elizabeth City State University
1:00 pm
Presenters: Molli Riddick and Albert Purdie (Students), Reverend Samuel Shaw (Bertie County Pastor) and Mr. Gene Motely (Bertie County Community Member)
Presiding: Dr. Kulwinder Kaur-Walker

WEDNESDAY APRIL 14, 2021
KINESIOLOGY AND PUBLIC HEALTH DAY

• Public Health Oral Presentation Series
Place: STEM 103

1:00 – 4:00 pm:

1:00 pm: An Examination of the Relationship Between Alcohol and Stress

1:30 pm: Exercise Science: Meeting the Course Objectives During the Pandemic, Solutions and Answers: Consideration for the Collegiate Instructor, Part II

2:00 pm: Public Health Management On American Indian Reservations

3:00 pm: Public Health Response to Corona Virus At International Airports, Including American Indian Reservation Airports.
Presenters: Noah Reese Gunter, MacArthur Lynch, Drs. Jennifer Brown and Lloyd Mitchell
Presiding: Dr. Lloyd Mitchell, (Host), and Noah Reese Gunter, (Student Co Host)

THURSDAY APRIL 15, 2021
FINE ARTS AND HUMANITIES DAY

• Visual Art/Graphic Design Showcase
All day (starts at 9:00 am):
Presiding: Jeff Whelan, John Stiles, Eric Luchian

• The Female Role: Its Harmful Nature in The Color Purple
Presenter: Sarah Atwell
• Pride and Prejudice and the Role of Money in Marriage
Presenter: Christin Castro

• The Evolution of Feminism and Gender Roles from Disney's Snow White to Brave
Presenter: Cameryn Dowdy

• Becoming Sister Abigail: How the WWE took Alexa's Bliss
Presenter: B.E. Peterson

• Ready Learner One: Leveling Up the Traditional Classroom
Presenter: Rachel Raduns

• We're With You: The Miseducation of The George Floyd Murder & #BLM
Presenter: Brandon Shaw
12:30 – 1:50 pm:
Presiding: Dr. Karra Shimabukuro

FRIDAY, APRIL 16, 2021
UNIVERSITY DAY

• ECSU Poster Session
Presiding: Dr. Margaret Young

• "The Art and Business of Television"
Guest Speakers: Ms. Stephanie McFarlane and Mr. Bryce Ahart
2017 -2018 HBOAccess Writer's Fellows, Staff Writers: HBOMax "Sterling", CBS "Legacies", NetFlix "First Kill"
12 noon – 1:00 pm:
Zoom Link
Presiding: Dr. Margaret Young and Dr. André Stevenson

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

UNDERGRADUATES POSTERS

AVIATION & EMERGENCY MANAGEMENT

Bullock, Moniah and Brown, Tajahnae (Dr. Kevin Kupietz) *Using Art to encourage preparedness for emergencies and disasters*

Class of AVI 350 (Dr. Chandra B. Asthana) *Analysis of factors causing runway excursion incidents and accidents*

Class of UAS 400L (Dr. Chandra B. Asthana) *Drone Operation Test Bench with Full 3D Rotational and Limited 3D Linear Degrees of Freedom*

Emergency Management Class EM 210: Disaster Response and Recovery (Dr. Kevin Kupietz) *HBCU's and their Relationship with Disaster Response and Recovery*

Emergency Management Class EM 490: Global Terrorism (ECSU Internal Review Board) *Recruitment by Extremist Groups on College Campuses*

Emergency Management Class EM 497: Seminar in Emergency Management (American Red Cross / Lars Knapp with the American Red Cross) *Examination of gaps in service for the American Red Cross's "After the Fire Program" in North Carolina*

Gilley, Colin (Dr. Kevin Kupietz) *Quantifying sea turtle behaviors using accelerometers*

Sánchez de Armijo, Lelani (Dr. Kevin Kupietz) *Hazard and Risk Assessment: Elizabeth City, NC.*

Soto, April (Chief Stormy Butts, Gates County Rescue & EM, Billy Winn, Emergency Manager for Gates County, and Dr. Kevin Kupietz, ECSU) *Hazard Analysis and Risk Reduction Plan for Gates County*

HEALTH AND HUMAN STUDIES

Davis, Jairus (Dr. Kulwinder Kaur-Walker) *The Impact of COVID-19 Environment on Health and Stress Level of Students*

French, Moriya (Dr. Kulwinder Kaur-Walker) *Impact of Exposure to Natural and Urban Ambience Sounds on Test Performance and Test-Related Stress and Anxiety*

Harrell, Julianna (Dr. Kulwinder Kaur-Walker) *Hurdles in Mental Health Resilience from Natural Catastrophes*

Lincoln, Acacia (Dr. Kulwinder Kaur-Walker and Ms. Sheriyse Williams) *The Effect of Background Music on Student Comprehension*

Luster, Naterria (Dr. Boung Jin Kang) *Quick Response (QR) Codes utilization in the Kinesiology/PE Classroom*

McMillan, Natisha (Dr. Kulwinder Kaur-Walker) *The Effects of Caffeine on Mood and Verbal Comprehension Test in Undergraduate Student*

Oo, Ye (Dr. Kulwinder Kaur-Walker) *Effect of hurricanes on mental health and resiliency/ recovery of residents in coastal North Carolina*

Perry, James (Dr. Kulwinder Kaur-Walker and Ms. Sheriyse Williams) *Effect of Preferred Background Music on Student Cognition*

Pierce, Taylor, Juan Fabian and Shenell Brown (Dr. Dolapo Adedeji) *Effects of Metformin and Doxorubicin on the Proliferation and Morphology of Androgen-sensitive (LNCaP), Androgen-insensitive (PC-3) Human Prostate Cancer Cell Lines and Normal Epithelial Prostate cell line (RWPE-1)*

Warren, Malik (Dr. Kulwinder Kaur-Walker and Ms. Sheriyse Williams) *The Short- and Long-Term Effect of Natural Disasters on Mental Health in the Coastal Carolinas Population*

Williams, Mekhi R, and Gregg Proctor IV (Dr. Kulwinder Kaur-Walker) *Finding Resilience after the Storm*

MATHEMATICS, COMPUTER SCIENCE & ENGINEERING TECHNOLOGY

Bell, Anthony, Christian Davis, Zachery Ambrose (Dr. Malcom Dcosta) *Motion Sensing Technologies in Smart Phones*

Bethea, Christaljah, Beny Baker, Able Dodo (Dr. Malcom Dcosta) *Bias in Machine Learning Algorithms*

Robertson, Darnell and Alexis Harmon (Dr. Adetayo Adedeji) *Passivity of TaSiN Barrier Layer on Thermochromic Vanadium Dioxide Thin Films*

Simmons, Kevin (Dr. Dipendra C. Sengupta) *Comparative Genomic Signature Representations of the Emerging COVID-19 Coronavirus and other Viruses*

NATURAL SCIENCES

Cuffee, Jazmine (Dr. Hirendra Banerjee) *Exploring the anti-cancer properties of novel Rhenium-based compounds*

Holden, Hanna and Dymonique Nellom (Dr. Margaret Young) *Ethyl Methanesulfonate (EMS) Mutagenesis of Wisconsin Fast Plants (Brassica rapa) for Salinity Tolerance*

Nellom, Dymonique (Dr. Margaret Young) *Mutated Clary Sage (Salvia sclarea) tested for Sodium Chloride tolerance*

Oliver, Michael (Mr. Justin Midgett and Dr. Roberto Frontera-Suau) *Design of a model aquaponics system to study microbial communities*

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

ABSTRACTS for Oral Presentations/ Sessions By Disciplines/Dates

Special Sessions

Monday, April 12, 2021
Education

Tuesday, April 13, 2021
Aviation & Emergency Management
Natural Sciences

Wednesday, April 14, 2021
Business, Accounting and Sports Management
Health and Human Studies

Thursday, April 15, 2021
English and Digital Media

ABSTRACTS for Poster Presentations By Disciplines

Friday, April 16, 2021
Aviation & Emergency Management
Health and Human Studies
Mathematics, Computer Science & Engineering
Technology
Natural Sciences

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

ORAL PRESENTATIONS ABSTRACTS

SPECIAL SESSIONS

Speaker: Dr. Jennifer Brown

Moderator: Drs. Melinda Anderson and Margaret Young

Disease Prevalence, Risk Perception, and Familial Incidence in a Rural University Student Population: Implications and Discussion

Interest Area/Track: Disease prevention; health; intervention; diabetes

Keywords: Heart disease, high blood pressure, diabetes, asthma, cancer, stroke

Learning Objectives: Elucidation on campus disease prevalence, student risk perceptions, gender roles, and familial disease risk.

Abstract Text: Students face numerous hurdles when transitioning into university life, including the management of personal health challenges. Assessment of the prevalence of medical challenges they face provides opportunity to develop better support systems. Incidence of disease is higher in minority populations, yet not well studied in college student populations that are dominantly African American. The purpose of this study was to collect self-reported health and risk perception data related to common diseases from students attending a rural North Carolina public university. This presentation will discuss disease prevalence, and health beliefs engaged in by students that may predict behaviors. Gender role contributions and familial disease prevalence will also be discussed.

Speaker: Dr. Claudia Rankins – PRISSEM Academic Services, LLC

Moderator: Ms. Annmarie Delgado

Getting to Know the National Science Foundation: An Agency Overview and Funding Opportunities

ECSU's Office of Sponsored Programs invites you to attend this first workshop in a series of interactive National Science Foundation (NSF) grant development workshops with Dr. Claudia Rankins of PRISSEM Academic Services, LLC. Dr. Rankins will give an introduction to the National Science Foundation (NSF) from the perspective of a long-time program director. In this session, she will discuss the structure of NSF, give an overview of funding opportunities, and describe how NSF solicits, receives, and reviews proposals. The NSF funding landscape of HBCUs will be presented. Further workshops will explore strategies for communicating with NSF program directors, the NSF merit review criteria, the role of project evaluation, and strategies for effective implementation of funded projects. In this workshop, participants will be encouraged to think about their 5-year research plans and identify NSF programs to which they plan to submit proposals.

Speaker: Dr. Christine Bradish

Moderator: Dr. Margaret Young

The Smell of Success: Northeast NC's local industry and its reach on global the fragrance industry

Clary sage (Salvia sclarea) has been grown as an industrial crop in Northeastern NC for 60+ years, and produces a special compound, sclareol. Avoca LLC in Bertie County holds an exclusive market on this crop, and contract with local farmers to grow between 1,500 - 30,000 acres/year for extraction of sclareol. Final extracts of clary sage are produced on-site at Avoca's manufacturing facility and sold directly to the fragrance market. Many people, including engineers, chemists, and chemical operators work together to make the extraction process more efficient. Plant researchers are utilizing plant breeding technology in clary sage to improve crop yield of sclareol and traits important to plant health. Finally, the industry and research at Avoca provide opportunities to local students of all disciplines.

Speaker: Dr. Janelle Jennings-Alexander

Moderators: Drs. Charles Reed and Adam McKee

HerStory: Conversations with Women in the Humanities

Dr. Jennings-Alexander (William Peace University) will share her experiences as a Humanities scholar, teacher, and activist, including reflections on African-American literature, anti-racist pedagogy, and the Raleigh Green Book Project. She will also discuss the importance of the Humanities at HBCUs and answer student questions.

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

ORAL PRESENTATIONS ABSTRACTS

EDUCATION

Student Author: Iesha Boone

Moderators/Mentors: Cheryl Luton, Jannifer Sykes, Shelia H. Williams

Family Engagement Using Researched Practices

To address the need for parent and community participation at Belmont Elementary Graded School in Roanoke Rapids, North Carolina, a project was developed using researched based strategies to ensure that all staff are communicating effectively with all parents, to create a better relationship and allow parents to feel comfortable asking questions and participating in school events that involve their child/children.

Creating school outreach materials will inform parents of any upcoming or special events. Providing parent and community workshops will benefit the students in many ways. Trainings for the community and parents will provide more assistance an assist the teacher with common issues within the school. Teaching and training parents on how to assist their children with homework assignments, behavior issues, bullying issues, and problem-solving strategies are included in the workshops for parents and the community.

Student Author: Lyla Hanig

Moderator/Mentor: Cheryl Luton, Jannifer Sykes, Shelia H. Williams

Assisting Public School Districts: Meeting School Improvement Plan Goals Through Research Based Projects

Each public school district must establish goals and objectives to meet student needs. ECSU Education majors must select a goal and develop a research-based project referred to as the School Leadership Project demonstrating leadership and collaboration. Jarvisburg Elementary in Jarvisburg, North Carolina identified family engagement as a goal.

This project reveals how to meet the needs of families and increasing family involvement by consistently incorporating diverse perspectives when working with students or their families and promoting the cultural interaction necessary to become a totally culturally responsive school. By being able to facilitate the shared understanding between the school's students, families, and staff, shows that the school can convey well with its community.

The project assists parents and families of children and the overall community of the school. The evaluation and outcome of the project will determine if there is improvement shown in the areas of communication and participation between the school and its' families/students.

Student Authors: Beverly Rooks-Hockaday and Waynetta Shabazz

Moderator/Mentor: Cheryl Luton, Jannifer Sykes, Shelia H. Williams

Parent and Family Involvement: Research Based Practices

Gaston Elementary School in Gaston, North Carolina's School Improvement Plan that the school will, "Ensure that the information related to school and parent programs, meetings, and other activities will be sent to parents of participating children in a format the parents can understand."

This project developed to assist the Gaston Elementary School in meeting the stated goal, involves a parent and family engagement plan to support in a consistent and effective manner those things already in practice as well as to generate new ways of strengthening the partnership between school and home based on research of best practices. The project includes participation by parents, teachers, Parent Council members, parent liaison and principal.

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

ORAL PRESENTATIONS ABSTRACTS

AVIATION & EMERGENCY MANAGEMENT & NATURAL SCIENCES

Authors: Drs. Malcolm LeCompte, Christopher Moore, Allen West and Timothy Witwer

Moderator: Dr. A. Victor Adedeji

Investigating evidence of recent comet or asteroid impacts

In a collaboration with interdisciplinary scientists at the Comet Research Group, Harvard University, East Carolina University, Univ of S. Carolina, Univ. of California, Santa Barbara, and NC State University, ECSU Scientists have been examining soil samples from various sites around the world believed to contain ejecta from cosmic impacts during the Late-Pleistocene and Holocene epochs. The multiple lines of impact evidence include melted, shocked and vaporized target rock and, less commonly impactor fragments. Microscopic (submillimeter) proxies are extracted from sediment samples to determine their physical form and surface crystallization patterns. Proxy forms include magnetic and glass microspherules, grains of melted terrestrial rock and glass, and quartz grains and zircons subjected to extreme temperatures and pressures. Proxy composition is determined by Energy Dispersive X-Ray Spectroscopic analysis (SEM-EDXS). Sample dates are established by 14C, OSL or archaeological context. Examples of impact proxy-evidence examined and analyzed with the ECSU scanning electron microscope facility will be presented and their production processes will be explained. Motivation for the research is provided by significant uncertainty in the frequency of small, yet destructive, cosmic impact events, Improved knowledge of the temporal and spatial distribution of such high-risk, low-probability events can be obtained by close examination of Earth's surface sediments. Results can be used to inform public policy and determine resource allocation for mitigation measure implementation. This research is supported by private individuals through a crowd-funding campaign.

Authors: Dr. Timothy Goodale (Graduate Education) and Dr. Hirendranath Banerjee (Biological Sciences)
Moderator: Dr. Xiaoli Yuan

Opportunities for Graduate Study in Biology and $20,000.00 Scholarships

36 selected scholars can complete a 14 month accelerated pathway that leads to both a Master of Science Degree in Biological Sciences and Initial North Carolina Teacher Certification in grades 9-12 Comprehensive Science while being supported with a $20,000.00 scholarship to cover cost of attendance at ECSU.

Project offers unique professional development opportunities and academic interventions that aim to enhance teacher conceptual understanding and efficacy to teach challenging and controversial scientific and environmental topics such as climate change and evolution.

Come learn more about this exciting opportunity!

Student Authors: The Aviation and Emergency Management Class

Moderators/Mentors: Dr. Kevin Kupietz (Program Coordinator EM) and Mr. Elton Stone (UAS)

Team work in Aviation and Emergency Management: Saving lives

This demonstration will show the integration of aviation sciences and emergency management students in combination conducting a coordinated search and rescue mission.

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

ORAL PRESENTATIONS ABSTRACTS

BUSINESS, ACCOUNTING AND SPORTS MANAGEMENT
HEALTH AND HUMAN STUDIES

Student Authors: Elizabeth Barry, Secret Webb, and Katria Beaty

Moderator/Mentor: Dr. Xiaoli Yuan

Accounting Research Forum

Currently, the two major sets of rules related to accounting are Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS). How do the two systems differ? How are they similar? Do you think that GAAP and IFRS should converge? The session will explain and bring a follow-up discussion by adding new information that supports or challenges the assertions made by our students.

Student Authors: Jarrod Borders and Talissa Spruill

Moderator/Mentor: Dr. Namhun Lim

[ECSU Basketball] Started from the Bottom, Now we here

Both the men's and women's basketball teams of Elizabeth City State University (ECSU) had only four wins and six wins out of 15 games, respectively, in the conference games remaining at the bottom throughout the 2019-20 season. Although the 2020-21 season was not held due to COVID-19, there is a need to analyze what areas were lacking compared to other teams for prepare for the 2021-22 season. Based on this analysis, it would be expected that attendees can expect better results next season. To analyze which offensive and defensive stats significantly influence team performance, the study will use the data of team statistics (i.e., field goals, 3-points field goals, free throws, rebounds, and turnovers) in the 2019-20 season provided by the Central Intercollegiate Athletic Association (CIAA). Through this analysis, it will be able to analyze the problems of ECSU's basketball teams in terms of their performance and prepare for next season based on the results of analysis. Findings and analyses will be covered in detail in the Research Week presentation, along with a discussion of the study results and limitations.

Student Author: Taliyah Griffin

Moderator/Mentor: Dr. Kungpo Tao

Marketing Research: Consumers' fundamental shifts to online activities during the pandemic

The pandemic has changed consumer behavior in terms of different formats. Online shopping, for example, is one of the fundamental changes that influence the consumer's daily life. Rather than examining a general phenomenon in all population, this study aims to understand how the pandemic has changed young people's behavior in entertainment. "How much time have college students spent on leisure activities before and during the pandemic?" is the central question of this study and the answer of which activities and why is an interesting topic and contributes to marketers. In fact, with more time staying home, students are spending less time on learning activities and more on leisure activities during the pandemic. Networking through social media and watching videos by using mobile devices and computers have become a norm that allows students to spend all their time working and entertaining. YouTube videos, and scroll through social media are the main resource for everyday needs. The pandemic has changed a lot of lives and college students have more than enough time to do what they want in their free time. However, less time spending on studies has been accepted by students as a trade-off for more leisure time and social online.

Student Author: Teirra Pettway

Moderator/ Mentor: Dr. Kungpo Tao

Marketing Research: The drivers of the growing market of wearable devices

Wearable devices are currently hitting an unexpected growth every year. Advancements in R&D have innovated the instruments that are driving the demand of the wearable market. Requiring essential technology, wearable devices are integrating electronics to the needs of daily life. However, the ability to better serve the consumers' daily requirements does not guarantee bright future in the market of wearable devices. The main question of this study is what really triggers the demand of the market. Today wearable devices run the world, every 1 of 6 adults have one. The number of devices is forecast to reach more than one billion by 2022. Just alone the smart watch market was valued at 216.18 million units in 2019 and is expected to reach 648.4 million units by 2025. Wearable medical device is another driver of the market as there is a rising concern of incidences of chronic diseases and the growing awareness of physical fitness and health. Consumers' willingness to spend more money on healthcare is expected in the future.

Author: Molli Riddick and Albert Purdie (Students), Reverend Samuel Shaw (Bertie County Pastor) and Mr. Gene Motely (Bertie County Community Member)

Moderator/Mentor: Dr. Kulwinder Kaur-Walker

Mental Health Associated with Natural Catastrophes in the Communities around Elizabeth City State University

Elizabeth City State University is a vital source for the surrounding communities that rely on it for

information, preparation and services for better life. We play an important role in the health life of those communities through various university initiated programs such as the Department of Health and Human Studies programs on mental health and COVID-19 awareness, and COVID-19 testing in the communities around us. A team of psychology program faculty and students ventured in to the nearby community affected by hurricanes repeatedly to investigate the mental health effects of hurricanes supported by the Department of Homeland Security Follow-on-Funding to Dr. Kaur-Walker. During this forum, we will focus on the main findings of our efforts that can resolve the mental health issues with intervention from the administration at various levels and our volunteers. The discussion will revolve around challenges in mental health and accessibility to services.

Authors: Noah Reese Gunter and MacArthur Lynch (Students); Drs. Lloyd Mitchell and Jennifer Brown

Moderators/Mentors: Dr. Lloyd Mitchell (Host) and Noah Reese Gunter (Student Co Host)

A Series Of Eight Presentations Related To:

1:00 Exercise Science: Meeting the Course Objectives During the Pandemic, Solutions and Answers: Consideration for the Collegiate Instructor, Part II

Presenter: Dr. Jennifer Brown
Higher order critical thinking and problem solving are key components that are meant to be developed, in part, through practical experiences. Turning theory into practice through the application of analytical processing skills has often been implemented in traditional models of clinical rotations, shadowing and field training. Numerous issues face collegiate instructors currently, including how to adequately address field placements and internships during this challenging time. Problem solving strategies for these key areas will be presented and discussed.

1:30 An Examination of the Relationship Between Alcohol And Stress
Presenter: Dr. Jennifer Brown

The purpose of the project was to determine the relationships between alcohol and stress. The main objective was to see if individuals consume more alcohol when they were stressed. Previous campus research conducted in the fall of 2019 at ECSU indicated increased stress and we wish to determine the effects of stress concerning alcohol usage. Individuals were eligible to participate in this study if they were a male or female, age 21-65, of any activity level. The online survey included individuals outside of ECSU and individuals who were a part of ECSU. All ethnicities and races were surveyed, gathering a snapshot of stress and risk relating to alcohol problems.

2:00 Public Health Management On American Indian Reservations, and

3:00 Public Health Response to Corona Virus At International Airports, Including American Indian Reservation Airports.

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

ORAL PRESENTATIONS ABSTRACTS

ENGLISH AND DIGITAL MEDIA

Student Author: Sarah Atwell

Moderator/ Mentor: Dr. Karra Shimabukuro

The Female Role: Its Harmful Nature in The Color Purple

This paper is focused on "the role of women" in the novel The Color Purple by Alice Walker. My analysis focuses on the lives of Celie, Sofia, Mary Agnes, and the role they played in this southern patriarchal society. During the early 19th century, women were expected to adhere to certain roles based on their sex which was largely limited to home or domestic work. The primary role for women of color in terms of behavior was to be self-sacrificing and compliant in this type of society. My argument is centered on why this assigned role for women is harmful in nature. Due to it not only bringing forth hardship and negative self-conceptions. It had also limited women in making choices about their own lives. Hindering them from developing their own personal abilities to make it out there on their own without a man.

Student Author: Christin Castro

Moderator/Mentor: Dr. Karra Shimabukuro

Pride and Prejudice and the Role of Money in Marriage

The aim of this article is to analyze the way financial wealth and class affected the concept of marriage in Pride and Prejudice. I want to deconstruct the differences of Charlotte Lucas and Elizabeth Bennet and examine the way materialism influences their attitudes and decisions regarding marriage. In the Regency/Georgian era, which the novel was based, status and financial gains for women were only obtainable through marriage, and I want to discuss how the differences in both of the women's familial economic backgrounds allowed them different marital opportunities and what created their different ideas of marriage.

Student Author: Cameryn Dowdy

Moderator/Mentor: Dr. Karra Shimabukurro

The Evolution of Feminism and Gender Roles from Disney's Snow White to Brave

This paper will be discussing the evolution of Disney's princesses and their represented gender roles and overall feminism portrayal throughout the years. From the Great Depression, to 2012 where feminism is on the rise, Disney princesses Snow White and Merida from the movie Brave,

show dramatically different perspectives on what it means to be a woman and the gender roles and feminism expectations during those specific points in time. Snow White represented a time where women were meant to stay home and work on things like cleaning and cooking. Merida represents a time where she not only was the first female protagonist for a Pixar film, but she also was the first princess to not be romantically involved with someone by the end of the film, which overall sets the tone for future princess films in the Disney franchise. This paper will be dissecting both films plots, the events happening at the time of the films releases, and overall comparing and contrasting the films and looking at how the evolution of Disney princesses have changed over time.

Student Author: B.E. Peterson

Moderator/Mentor: Dr. Karra Shimabukuro

Becoming Sister Abigail: How the WWE took Alexa's Bliss

This paper will look at how recent shifts in character in WWE star Alexa bliss have taken her from a place of empowerment to a place of adornment while also making her a "castrating woman," a tool unleashed on the foes of her counterpart, Bray Wyatt. This shift in character riffs on popular culture horror elements from other media, turning Alexa into Sister Abigail, a sort of Anti-Final Girl.

Moderators: Jeff Whelan, John Stiles, Eric Luchian

Visual Art/Graphic Design Showcase

This will be a slideshow of visual art and graphic design, as well as video presentations.

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

POSTER PRESENTATIONS ABSTRACTS

AVIATION & EMERGENCY MANAGEMENT

Student Author: Moniah Bullock and Tajahnae Brown

Using Art to encourage preparedness for emergencies and disasters

As America has been facing more and more severe disasters in the past five years it is more important now than ever for the American people to be properly prepared for emergencies and disasters. The problem is that often it is hard to get people to understand the importance of preparedness. This project attempts to further awareness to preparation needs through art. This project depicts sketches of the faces of disasters as well as poetry from ECSU EM students as a novel approach to preparedness education. It is hoped that with interdisciplinary projects such as this that the ECSU EM students can develop novel approaches to help individuals, families, organizations, and communities be more resilient to emergencies and disasters.

Student Author: Collin Gilley

Mentor: Dr. Kevin Kupietz

Quantifying sea turtle behaviors using accelerometers

The purpose of this project is to identify the top five hazards in Norfolk, Virginia, further analyze the top three hazards, giving risk reduction strategies for each, and use this data so that citizens will have a greater understanding of the specific hazards facing Norfolk, Virginia. Norfolk has recurring disasters that are becoming worse, which if left unaddressed will result in billions of dollars in infrastructure destroyed and the city consistently being flooded. Norfolk has considerably important ports, buildings, and military bases that will be affected or deemed inoperable if the flooding is not mitigated in some way. Norfolk also has vulnerable populations that create more complex problems requiring specialized solutions. This information was acquired through reviewing a number of articles and analyzing appropriate maps and graphs that relate to the specific hazards discussed. Flooding is the largest hazard facing Norfolk, due to sea level rise and land subsidence. Vulnerable populations and valuable infrastructure will be destroyed if significant action is not taken. Norfolk is undergoing certain mitigative actions to reduce the risk of these hazards, though it is unclear if the current steps will be sufficient.

Student Author: Lelani Sánchez de Armijo

Mentor: Dr. Kevin Kupietz

Hazard and Risk Assessment: Elizabeth City, NC.

This is an Emergency Management study that assess the hazards and risk of those hazards affecting the town of Elizabeth City, NC. The research takes a holistic approach to natural and man-made hazards that have affected the city in past and recent years, causing significant losses in Pasquotank County. For this assessment, the city's demographic information and history of hazards has been considered to predict future events. With this research we will propose possible solutions to help minimize the risks on the vulnerable and potentially affected population.

Student Author: April Soto

Mentors: Chief Stormy Butts, Gates County Rescue & EM, Billy Winn, Emergency Manager for Gates County, and Dr. Kevin Kupietz, Elizabeth City State University (Emergency Management Department).

Hazard Analysis and Risk Reduction Plan for Gates County

Gates County North Carolina is large at 340.45 square miles of land, and 5.2 square miles of water, (Census Reporter; 2017, P.1). Large portions to the county are vulnerable to flooding due to poor soil drainage systems that are in poor working order, as well as surges that stem from heavy rain, hurricanes, and nor'easters. The county is mainly comprised of swamp land and there are many factors to take into consideration. These would include but are not limited to the surge areas as well as the poverty-stricken population. This research project covered the top five hazards for Gates County. The hazards were raked from very high to very low. And covered the following topics: Flooding (Flood Plain, Storm Surge), Damage to Infrastructure (Erosion, Collapsed Roads, Bridge Structures), Drainage Systems (Ditches, Culverts, Engineered Water Pumps), EMS Response (Delays in Response, Understaffed, Improper Crew Placement), and Sub-Par Housing (Ill Repaired, Condemnable). The county has mutual aid agreements with several of the surrounding counties such as Herford Co, Suffolk Co, Pasquotank Co, Perquimans Co, and Chowan Co. Many of these counties are in a similar disposition with flooding and surges. Planning to become self-sustaining post disaster could help tremendously as mutual aid may not be available. This project gave descriptions of issues after Hurricane Matthew in October of 2016. It also covered topics such as: Vulnerabilities, Information on Flood Plain and Storm Surge. After the information was provided ideas on how to lower the risks and hazards were given.

Student Author: Class of AVI 350

Mentor: Dr. Chandra B. Asthana

Analysis of factors causing runway excursion incidents and accidents

A runway excursion occurs when a departing aircraft fails to become airborne or successfully rejects the take off before reaching the end of the designated runway or when upon landing, it is unable to stop before the end of the designated runway is reached. It is a veer off or overrun from the runway surface. In most cases, authorities issue recommendations to the pilots to be followed during landing and takeoff to avoid it from happening in future. However, the recommendations are in terms of following appropriate procedures that may not be adequate due to technical issues.

Students of AVI 350 (Advanced Aerodynamics) course in Spring 2021 semester have collected data for runway excursion occurrence in USA since 2015 and analyzed it. Their analysis brings out the

correlation among various factors causing it such as type of aircraft, runway condition, crosswind, aquaplaning, weather conditions, pilot stress level, communication between Air Traffic Control and pilot etc. The value of this research lies in identifying the technical remedial measure that can be employed to assist the pilot in such situations. The results of this study are helpful in increasing pilots' situational awareness and enhancing automation during landings.

Student Author: Class of UAS 400L

Mentor: Dr. Chandra B. Asthana

Drone Operation Test Bench with Full 3D Rotational and Limited 3D Linear Degrees of Freedom

Unmanned Aircraft Systems (UAS) extend human potential and allow us to execute dangerous or difficult tasks safely and efficiently, saving time, saving money and, most importantly, saving lives. Recently, legislation was signed into law that will help safely and responsibly unlock the tremendous potential of UAS to keep the public safe, create lasting jobs, boost local economies, and further advance the U.S. as a leader in technology and innovation.

However, one of the requirements is to obtain Part-107 license to be able to fly UAS. While the theoretical test can be passed by studying the recommended material, the ability to fly it well depends on practice. Practicing flying outdoors entails risks until one has gained expertise. Therefore, an indoor test setup is very beneficial to practice even without having Part-107 license.

Any flying object executes six Degrees of Freedom (6 DOF) in space. To have such a test setup is very useful to practice flying without any risk. Unfortunately, there is no such test bench with 6 DOF available.

The class of UAS 400L has developed such a test setup that is located inside STEM complex. The hardware development was accomplished by all the student in Spring 2021 semester. It has full three Degrees of Freedom (3 DOF) in rotational motion and limited 3 DOF in linear motion. The test bench has been used for flying Tello UAV and work is underway to extend its capacity to be able to fly bigger UAVs.

Student Author: Emergency Management Class EM 210: Disaster Response and Recovery

HBCU's and their Relationship with Disaster Response and Recovery

Disasters are not new to the world, but records of the last few years do indicate that they are getting both more frequent and more severe in destructive forces. While everyone is at risk of these increasing events there are those populations that have higher rates of adverse consequences making them more vulnerable to these disasters. Historically Black Colleges and Universities (HBCUs) have long served their communities often specializing in the education and training of some of these vulnerable or at-risk populations. Observationally though, disaster response and recovery planning prior to events is not always seen as a top priority in these institutions as they struggle for resources to maintain their primary mission goals. There currently is no real knowledge to the level of university readiness for response and recovery operations on HBCU campuses as well as any consolidated knowledge on HBCU's ability to help their communities in times of disasters. This foundational research project collected and examined preliminary desk research data of HBCUs in North Carolina, Virginia,

South Carolina, Georgia and the Virgin Islands to determine past disaster events and actions affecting these universities. This data was collected in order to answer the question what are the threats from disasters to HBCUs. This is the first part of ongoing to research into HBCU disaster efforts conducted by the ECSU Emergency Management program.

Student Author: Emergency Management Class EM 490: Global Terrorism

Mentor: Elizabeth City State University Internal Review Board

Recruitment by Extremist Groups on College Campuses

Terrorism is a centuries old problem that has had catastrophic effects on communities around the world. America has been locked in a war on terror for more than two decades now and as gains might be considered to be seen on one front such as the international stage renewed threats in other areas such as domestic terrorism/extremism can be seen. These ongoing threats suggest that the current strategy needs to be shifted with more emphasis on breaking the recruitment capabilities of these groups. While it has been long believed that the young minds on college campuses are a fertile recruiting grounds for extreme groups the scope of the efforts are largely unknown. This project utilizing an online survey tool examines the extent to which terrorism recruitment happens on college campuses. It is believed that by understanding the frequency and the methods in which recruitment is conducted on campuses by extreme groups that better defense mechanisms can be put in place by university leadership. It is further believed that with a reduction in recruits to extreme ideologies and organizations that the level of terrorist violence will be decreased.

Student Author: Emergency Management Class EM 497: Seminar in Emergency Management

Mentors: American Red Cross and Lars Knapp with the American Red Cross

Examination of gaps in service for the American Red Cross's "After the Fire Program" in North Carolina

Every 1.8 days a fire takes a life in North Carolina. In the larger picture of disaster responses, a normal residential fire is considered an emergency, an every day event. To the people that live in the home it is a dire disaster as they have lost property, shelter, and in some cases life. First responders do an outstanding job of taking care of these people/family with putting out the fire and tending to their immediate injuries, but that is where their help and expertise ends. It is at this point that American Red Cross (ARC) offers support with their "After the Fire" program. The ARC will send help, to the scene if needed, and arrange for the needs of the victims such as shelter, food, clothing, etc. Though not normally thought of as an emergency need, it is a vital part of the family recovery process to help them back to a state of normalcy after their life changing event. It is known that the ARC is not made aware of all fire victims and has gaps in their services in North Carolina. This project working with the ARC county fire data has been acquired from local 911 services as well as ARC fire response data. These different sets of data were mapped and analyzed to look for gaps in service area by the ARC. With the gaps identified later research can be conducted to determine why the gaps are present and how to eliminate the gaps.

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

POSTER PRESENTATIONS ABSTRACTS

HEALTH AND HUMAN STUDIES

Student Author: Jairus Davis

Mentor: Dr. Kulwinder Kaur-Walker

The Impact of COVID-19 Environment on Health and Stress Level of Students

This project was an effort to evaluate experiences in the mental space of students impacted by the current COVID-19 pandemic. The virus has forced universities, public establishments, and businesses to close down leaving students with limited access to money, transportation, and an environment that is not conducive to productivity and health, especially mental health. I used a questionnaire on perceived well-being including mental health and other effects before and during COVID-19 pandemic quarantine and the restrictions on students. I contacted students at an undergraduate university via Student List moderator and social media with anonymous Qualtrics survey link. Fifty students responded to the questionnaire and the data indicated a trend that students perceived negative effect of pandemic circumstances on their well-being, though the results did not reach the level of significance to generalize the findings. Further, data are being collected to reanalyze. The literature on the adjustment to the pandemic by students and the institutions show that we are somewhat coming back to a sense of new normal, though not the same as before. For the next few months, the quality of life will be determined on existential factors, that vary for individual students.

Student Author: Moriya French

Mentor: Dr. Kulwinder Kaur-Walker

Impact of Exposure to Natural and Urban Ambience Sounds on Test Performance and Test-Related Stress and Anxiety

I investigated the relationship between exposure to nature vs. urban soundscapes and their effect on stress level, anxiety, and test performance among college students using independent groups design through anonymous Google forms survey. Student participants were recruited from ECSU and social media, then randomly assigned to one of the three group conditions. Each participant was contacted with information for taking the test via Zoom, conducted separately for each group/condition. Three groups of students with 15 per group participated in three different soundscape conditions. They took a math and reading comprehension test while exposed to the specific soundscape in each group. At the end of the test, they were given a questionnaire on their self-perceived experience of stress and anxiety while taking the test. The hypothesis was that the group exposed to nature would perform significantly better and experience less stress and anxiety than the group exposed to urban or metropolitan sounds. For the smaller data set, the hypothesis was not supported with ANOVA results, so I will continue to add more participants for more reliable data and findings.

Keywords: nature, urban, city, ambience, anxiety, stress, test performance

Student Author: Julianna Harrell

Mentor: Dr. Kulwinder Kaur-Walker

Hurdles in Mental Health Resilience from Natural Catastrophes

I studied the challenges that individuals face to bring complete resilience from mental health effects following natural catastrophes. Available research indicates that individuals living in natural catastrophe prone areas are particularly at risk for adverse mental health effects. Suicidal ideation, drug abuse, and Post Traumatic Stress Disorder are among some of the many issues that can hinder individuals following a natural catastrophe. The literature suggests many factors involved in resilience and the ways communities can build this resilience to buffer the effects of devastating natural catastrophes. In this study, 100 residents of Northeastern North Carolina completed an online questionnaire via an anonymous Qualtrics link and Connor-Davidson Resilience Scale (RISC) to assess hurricane related mental health effects using the Post Hurricane Health Effect Assessment. Correlations between resilience and mental health effects and data were analyzed with SPSS version 27. RISC scores and mental health effects were negatively correlated indicating that individuals experiencing mental health issues tend to have lower levels of resilience.

Student Author: Acacia Lincoln

Mentor: Dr. Kulwinder Kaur-Walker and Ms. Sheriyse Williams

The Effect of Background Music on Student Comprehension

The purpose of this study was to examine the effect of classical and jazz music in the background on student performance while taking reading comprehension test. Classical music is soothing in nature whereas jazz is upbeat, thus, affecting the level of concentration on a cognitive task. Forty-five participants were recruited from psychology classrooms with instructor permission. Using independent groups design, they were divided into three groups, with 20 in each condition, classical, jazz, and no music in the background. They were given a reading comprehension test while the music running in the background as part of the condition. They were also given a brief questionnaire at the end about their perception of the effect of the classical and jazz music on their performance with some demographic question. The data were analyzed with simple ANOVA using SPSS version 27. The results suggested that those who experienced classical music in the background scored higher than those who had either no music or jazz.

Student Author: Naterria Luster

Mentor: Dr. Boung Jin Kang

Quick Response (QR) Codes utilization in the Kinesiology/PE Classroom.

The purpose of this study was to explore the perception of collegiate Kinesiology or Physical Education (PE) class students' analyses teaching methods, and processes that incorporate Quick

Response (QR) codes and mobile devices into the classroom by using qualitative research. QR codes are two dimensional barcodes that are used to encode and decode information. QR codes can contain information such as lecture contents, URL links, assignments or just about any Kinesiology/ PE class information that can be embedded in a two-dimensional barcode. This encoded data can be decoded by scanning the barcode with a mobile device that is equipped with a camera and QR reader software. Although QR codes are very versatile and have been around for over fifteen years, their use in Kinesiology/PE field is still in infancy. Kinesiology/PE course students recognized that using technology can be archived positive learning effect. Specifically, first, it could improve all students' learning interest, motivation, and involvement. Second, technology can allows students saved class management and learning time for the activity class. The last, the knowledge of Kinesiology/PE can be expanded during the lecture. The future suggestions of the technology in Kinesiology/PE class is as follows. First, support more technical system for functional problems should be provided. Second, it is necessary to develop technologies associated with Kinesiology/PE curriculum. Third, educational content should be developed to cultivate cooperation and cohesion through technology. Fourth, the perception of Kinesiology/PE class and technology will have to change.

Student Author: Natisha McMillan

Mentor: Dr. Kulwinder Kaur-Walker

The Effects of Caffeine on Mood and Verbal Comprehension Test in Undergraduate Students

In this study, I investigated the effect of caffeine on the participants' test performance and their mood. It is a common observation that majority of college students consume caffeine in one form or another before going to classes, especially in the morning. The purpose of this study was to see if caffeine consumption had any significant effect on student mood and academic performance. There was 30 undergraduate students that were recruited via handout flyers, social media, and email. They were randomly divided into placebo and caffeine group. They were handed the pills and instructed to join the zoom study session at a scheduled time. In the beginning of the session, they were instructed to take their pills with water. They were asked to complete a questionnaire that reflects their mood and after having general conversations for 15 minutes so that the caffeine kicks in. Then they were instructed to take the comprehension test and mood question again at the end. The data were analyzed for the pill condition and mood before and after with independent samples t-test using SPSS version 27. The results have shown some change of mood and performance due to intake of caffeine, though due to smaller sample size the differences were not found to be significant. I will continue to add more data for a comparatively larger sample to reanalyze the results.

Keywords: caffeine, mood, test performance

Student Author: Ye Oo

Mentor: Dr. Kulwinder Kaur-Walker

Effect of hurricanes on mental health and resiliency/ recovery of residents in coastal North Carolina

I observed the factors associated with mental health resiliency in residents living in Northeastern Coastal North Carolina due to environmental disasters such as hurricane and tornadoes. Researchers in the Psychology department teamed up with the department of Homeland Security and investigated the relationship between those affected by recent and past hurricanes and their mental health needs whether met or not. Past research shows that higher levels of exposure to disasters are associated with higher levels of distress and individual level of experiencing such distress is associated mainly with their status in terms of gender, age, and ethnicity (Fergusson, Boden, & Horwood, 2014; Kousky, 2016). Post-Hurricane Health Effect Assessment (PHHEA) was distributed to participants who resided in the hurricane effected counties in northeastern North Carolina via Qualtrics survey link by posting the announcement at social media cites and emails to acquaintances to share the link. The questionnaire responses were analyzed using SPSS version 27 and the results supported the hypothesis that the residents in hurricane effected areas experience mental health and substance abuse issues and in remote areas they do not have appropriate and accessible mental health services. Administration at county and higher levels need to pay attention to an important aspect of their community to bring resilience.

Student Author: James Perry

Mentors: Dr. Kulwinder Kaur-Walker and Ms. Sheriyse Williams

Effect of Preferred Background Music on Student Cognition

The purpose of this study was to see if background music influences the concentration level of students that is needed for better cognition and memory. Sixty undergraduate students were recruited from three different programs by going to the classes. They were divided into three groups randomly to participate in three study conditions with preferred, non-preferred, and no music in the background while taking a reading comprehension test on a sample SAT paragraph and a series of questions pertaining to their perceptions of the effect of background music while participating in the study. The comprehension scores for three groups were compared using ANOVA indicating differences in preferred and no background music condition with some interpretable relationships for music preferences and perceived effect on comprehension.

Keywords: Music, Study

Student Authors: Taylor Pierce, Juan Fabian and Shenell Brown

Mentor: Dr. Dolapo, Adedeji

Effects of Metformin and Doxorubicin on the Proliferation and Morphology of Androgen-sensitive (LNCaP), Androgen-insensitive (PC-3) Human Prostate Cancer Cell Lines and Normal Epithelial Prostate cell line (RWPE-1)
The effects of Metformin and Doxorubicin on human prostate cancer cell lines - LnCAP and PC-3, normal epithelial prostate cell line RWPE-1 and morphological changes using Scanning Electron Microscope (SEM) was observed.

In vitro anti-proliferative activity of 3-(4,5-Dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay was used to assess the effects of metformin and doxorubicin on LnCaP, PC-3 and RWPE-1 after 72- and 120 – hour exposure. Images of samples with and without the drugs were

acquired using SEM. Overall, our study demonstrates that metformin and doxorubicin at different concentrations lead to cell death ranging from 42 -87% and 32 – 83% respectively. Most effect was seen on PC-3 with little or no effect on RWPE-1 cell line. Combining metformin with doxorubicin displayed some cytotoxicity regardless of the type of prostate cancer cell line with little or no effect on normal epithelial prostate cell line. Changes were also observed in the cell morphologies with and without drugs using SEM. This may offer a promising new therapeutic option for the treatment of metastatic hormone-refractory prostate cancer for patients with diabetes and aid in reducing prostate cancer mortality rate in men.

Student Author: Malik Warren

Mentors: Dr. Kulwinder Kaur-Walker and Ms. Sheriyse Williams

The Short- and Long-Term Effect of Natural Disasters on Mental Health in the Coastal Carolinas Population

We observed the effect of past natural disasters on mental health in the Coastal Carolinas population. The purpose of this study was to identify the causes and resolves for Mental health in that population that has been repeatedly affected by natural catastrophes. The mental health is an integral component of overall wellbeing of individuals and the communities. The mental health issues directly affect the economy of the community. The natural catastrophes lead to immediate anxiety, stress, and lingering on mental health issues like PTSD, depression, anxiety, and others for long time affecting the communities. The data collected from the study population with anonymous Qualtrics Questionnaires survey link. We distributed the link through Instagram, snapchat, and twitter etc. Eighty-nine participants responded to the survey. The correlational analysis indicated relationship between exposure to catastrophes and the experience of mental health issues including substance abuse. It brings the attention to provide mental health services in such populations.

Student Authors: Mekhi Williams and Gregg Proctor IV

Mentor: Dr. Kulwinder Kaur-Walker

Finding Resilience after the Storm

Many people are affected by hurricanes every year and often, it is hard for the people to get back on their feet. Studies support that people enduring natural calamities experience a variety of mental health issues from minor to major with short to long-term effects. The purpose of this project was to identify the factors bringing complete resilience to the affected population. The participants responded to questions about their experiences through the pictures they took and shared with the research team for discussion using the photovoice method. Five participants took pictures to trigger discussion and participate in discussion for this study. The qualitative data supported with pictures were analyzed using coding of transcribed content of discussions. The outcome reflected the inadequacy of services in the underserved community affected by hurricanes in addition to issues like transportation, insurance, taking time off work, family support due to overworking or addicted family members. The mental health service providers are practically none in the area. School children get attention and treatment including therapies through school while adults add to their and community suffering.

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

POSTER PRESENTATIONS ABSTRACTS

MATHEMATICS, COMPUTER SCIENCE & ENGINEERING TECHNOLOGY

Student Authors: Anthony Bell, Christian Davis and Zachery Ambrose

Mentor: Dr. Malcom Dcosta

Motion Sensing Technologies in Smart Phones

The ubiquitous presence of smart phones allow for 24X7 monitoring of human activity patterns, whether counting daily steps, distance walked/ ran or hours slept in a night. All of this is captured via a number of sensors, just as GPS monitoring and the tri-axis accelerometer. In out research we will cover the tri-axis accelerometer and their variants and present few algorithms to extract its signal and count steps or kind of physical activity.

Student Author: Christaljah Bethea, Beny Baker and Able Dodo

Mentor: Dr. Malcom Dcosta

Bias in Machine Learning Algorithms

Machine Learning is a branch of artificial intelligence focused on building applications that learn from data and improve their accuracy over time without being programmed to do so. It relies on two steps. First is training a model to learn and recognize items or classifications of items based on training examples. And second is testing the model against new examples previously unseen to the model. An example would be training a model to recognize a variety of dogs, and testing it against a picture of a wolf. Whether the model successfully classifies the wolf as an input not in the class of dogs depends on the number examples and scope of the training set. Similarly, several algorithms designed to recognize human emotion using facial expression analysis fail to correctly recognize expressions of darker skin individuals. These biases are due to several reasons. Perhaps the test population may not have been a good representation of the population or the conditions under which the testing was carried out may have been suboptimal, such as poor lighting, which may not affect classification of lighter skin individuals as drastically as darker skin individuals.

Student Author: Darnell Robertson and Alexis Harmon (MCSET)

Mentor: Dr. Adetayo Adedeji (Nat Sci)

Passivity of TaSiN Barrier Layer on Thermochromic Vanadium Dioxide Thin Films

Amorphous TaSiN is a well-known oxidation and diffusion barrier layer for microelectronic devices fabricated to operate in harsh environments. TaSiN is traditionally used as part of the metallization scheme to shield contacts and interconnects from extreme environments and inter-layer diffusion. In this project, we studied the passivity of TaSiN - VO2 interface and the anti-reflective characteristic of TaSiN cap layer. Different layers geometry investigated on fussed quartz substrates(Q) include: (i) Q\VO2, (ii) Q\ VO2\TaSiN, (iii) Q\TaSiN\ VO2 and (iv) Q\TaSiN\ VO2\TaSiN. All the layers were deposited by magnetron sputtering method. The VO2 layer was prepared by sputtering pure vanadium target and subsequently oxidizing the layer at 500°C, 800 mtorr pressure for 4 hours. TaSiN layers were deposited by reactive sputtering of pure TaSi2 target in argon and nitrogen gas mixture at room temperature. VO2 thermochromic transition were observed optically and electrically and studied to see the effect of TaSiN on the property. Transmittance and sheet resistivity of VO2 were not adversely affected by the presence of TaSiN layers. Though the transition temperature shifted slightly to higher temperatures for sandwiched VO2 layer, the transition characteristics is not degraded. Transparent TaSiN is showing promise as a passive and protective layer for opto-electronic devices.

Student Author: Kevin Simmons

Mentor: Dr. Dipendra C. Sengupta

Comparative Genomic Signature Representations of the Emerging COVID-19 Coronavirus and other Viruses

The coronavirus poses a serious threat to human health and global security because several coronaviruses could cross-species to infect humans, such as the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV), Middle East Respiratory Syndrome Coronavirus (MERS-CoV) and now SARS-COV-2. Proper phylogenetic classification and identification of different strains of RNA viruses including SARS-COV-2 play a major role in monitoring the epidemic and is also a critical component for effective treatment strategy. Motivated by this broad aim, we developed a computational method combining with Chaos Game Representation (CGR) to perform clustering analysis and create a phylogenetic tree based on it .This is obtained by first computing “distance” for each pair of graphical representation of DNA sequences, then visualizing the resulting interrelationships in a two-dimensional plane. The graphical representation we will use here is CGR of DNA sequences that simultaneously displays all subsequence frequencies of a given DNA as a visual pattern. CGR has a remarkable ability to differentiate between genetic sequences belonging to different species and has thus been proposed as a genomic signature. The specific aim of this study is to identify intrinsic viral signature, and utilizing them to classify pathogen sequences available through NCBI database. As an experiment, initially we tested our methods on coronavirus data sets and further tested on more data sets and make comparison with Clustal X analysis technique which is one of the most popular alignment methods. Our alignment-free computational method shown to be capable of finding closest genetic relatives of coronavirus.

ELIZABETH CITY STATE UNIVERSITY
UNDERGRADUATE RESEARCH WEEK 2021

POSTER PRESENTATIONS ABSTRACTS

NATURAL SCIENCES

Student Author: Jazmine Cuffee

Mentor: Dr. Hirendra Banerjee

Exploring the anti-cancer properties of novel Rhenium-based compounds

Despite ongoing research, cancer remains a lethal disease claiming the lives of over 600,000 people in the US alone each year. While there are treatments available, many of them are toxic to healthy tissues in addition to the tumors they are designed to kill. Using Rhenium as the core for compounds can enable anti-cancer properties while also having lowered toxicity towards non-cancerous tissues in the human body. Here we studied the anti-cancer properties of 10 rhenium-based compounds by exposing cancer cell lines to the compounds for 48 hours before using a MTT assay to measure viability. The compounds showing the most promise was then tested further to see if the compounds could block spheroid formation. These spheroids serve as an indicator for stem-cell like properties in cancers that can lead to relapses if left untreated.

Student Author: Hanna Holden and Dy'Monique Nellom

Mentor: Dr. Margaret Young

Ethyl Methanesulfonate (EMS) Mutagenesis of Wisconsin Fast Plants (Brassica rapa) for Salinity Tolerance

Wisconsin Fast Plants (WFP; Brassica rapa) is a model plant that has been used for experiments in laboratories due to its fast generation rate, high survivability, and petite size. With the exception of Halophytes, plants are not salt tolerant because the salt prevents the absorption of nutrients which usually results in death. Experiments were conducted using 0.2% ethyl methanesulfonate (EMS) to induce mutation for salt tolerance in WFP. Generations M0-M2 were not subjected to NaCl and were observed for any changes in the phenotype. In the M3 generation, seeds were germinated, then watered with 250 mm NaCl once weekly for 5 weeks. The results were the plants survived the salt treatments, but the seeds produced were small and misshapen. No control plants survived or produced seeds after the salt treatments. The remaining, unused seeds of the M2 generation will be planted in order to generate a viable M3 generation to subject to salt tolerance testing. The M3 generation from the original experiment will also be planted to observe growth and to obtain a viable M4 generation. Further experimentation will be done to see if the M4 seeds of Wisconsin Fast Plants (Brassica rapa) are tolerant to salt.

Student Author: Dy'Monique Nellom

Mentor: Dr. Margaret Young

Mutated Clary sage (Salvia sclarea) tested for sodium chloride tolerance

Clary sage (Salvia sclarea L.) is known for the use of its essential oils and aromatherapy. It also has anti-bacterial properties. It is now widely grown in Northeastern North Carolina. Development of salt tolerant varieties is important as climate change is causing oceans to rise. The objective of this experiment was to treat gamma rays mutated Clary sage plants with sodium chloride (NaCl) in order to find resistant lines. M2 seed lines and a control line were grown after the seeds were treated with gamma rays (170 gy). After 4 months, half of the lines were treated with 250 mM of NaCl three times a week for one week; the other groups were treated with water. The concentration of the NaCl increased to 1M. Data were taken on survival, leaf necrosis, and plant height. All the leaves of the control plants were necrotic after 1M NaCl treatment. The majority of the M2 lines were necrotic with only 17% surviving the salt treatment. These plants will be observed for flowering and seed formation. The M3 lines will be investigated for salt tolerance. The future experiments will involve DNA profiles of surviving plants.

Student Author: Michael Oliver

Mentors: Mr. Justin Midgett and Dr. Roberto Frontera-Suau

Design of a model aquaponics system to study microbial communities.

Aquaponics is a novel agricultural application that couples hydroponics and aquaculture techniques. It utilizes the ammonia rich waste from the aquaculture of commercial fish to provide nutrients for microbial cultures, which in turn oxidize the ammonia into nitrate, making it available for plant growth. As part of this study, we have designed a bench top model aquaponics system that utilizes solid substrate and continuous flow beds to grow plants using recycled wastewater from fish cultures. The system will be sampled for bacterial community analysis focusing on three sample points; the fish gut microflora, the biofilter community and plant mycorrhiza. Bacterial community DNA will be extracted using a PowerSoil DNA extraction kit and analyzed by sequencing.

UNDERGRADUATE RESEARCH WEEK

2021

SOAR

ELIZABETH CITY STATE UNIVERSITY

ECSU

ELIZABETH CITY STATE UNIVERSITY

FOUNDED 1891