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Abstracts

College of Arts

Department of Art and Design

The Textile Industry at Pompeii

Sydney I. DeMent

Sponsor: Glenda Swan

The excavations of Pompeii that began in the mid-18th century have revealed much about how the ancient Romans worked and lived, but there remain many cases where the study of the archaeological evidence has led to very different interpretations among scholars. The numerous workshops associated with textiles found across the city soon led to the assumption that textile production was a major industry in Pompeii. However, most of the evidence within these fulleries or fullonicae suggests that they were more focused on the cleaning of clothes rather than the industrial construction of textiles. Also, their locations within converted homes would not have been large enough to support the level of production required for the exportation of textiles. Instead, their many locations across the city could easily be interpreted as providing the convenience of a local laundromat, which also reflects Roman concerns about cleanliness and hygiene. Despite the unpleasant smells and processes that would have accompanied the fulling process to clean and whiten clothes, the fresco painting found at the Fullery of Hypsaeus provides visual evidence of how that business proudly promoted its services to its customers.

The Value of Scientific Inquiry?

Sidney M. Wilson

Sponsor: Dr. Glenda Swan

For a long time, science has been valued and honored for making useful and important contributions to society, and artists have recorded and glorified the contribution of scientists in their art. However, today many people are questioning the value of scientific inquiry. For that reason, I felt it was important to uphold the impact that science makes on society as well as have that impact continue to be celebrated in art. The art historical research I undertook as part of a First Year Seminar Experience course culminated in an imagined exhibition of my own choice of theme and design. I used academic sources to select images and analyze how philosophers, doctors, and astronomers were dramatically and heroically displayed in works of art from the Renaissance to the 19th Century and then concluded with a discussion of the contemporary “#IfThenSheCan” Exhibit. This exhibition of life-sized, 3D printed statues of women currently working in STEM fields highlights the importance and diversity of all the people working to make important contributions in science today, allowing these women to stand side by side to those great men of science in the past.

Department of Communication Arts

How the Level of Support Received is Related to the Level of Confidence in Making a Positive and Sustainable Change within One's Community?

Adalyn N. Watkins
Sponsor: Dr. Chialing Ho

This research was conducted to discern if a relationship exists between the level of support individuals received and their levels of confidence in contributing to their communities. Literature showed that youth perceived that they were not heard and felt disempowered in the larger community. A survey was conducted and 16 respondents were recruited via convenience sampling. Results showed that the degree to which the amount of support received has a positive, and a moderately strong correlation with the degree to which individuals feel confident to make a sustainable change within their community.

Examining the Relationship between Watching Sports Programs and Feeling Stressed

Dylan Harvey
Sponsor: Dr. Chia Ling Ho

Recent studies showed that TV ratings for watching sport programs have skyrocketed in recent years for major sports such as NFL, NBA, MLB, and NHL, and that meant more views for their sport programs. Watching these sports programs tends to make viewers feel stressful when viewers' favorite team is playing. The current research examined the extent to which the level of watching sports games on TV was related to the level of stress individuals experience. After surveying 17 participants in the study, the results were contrary to what was predicted in the prior literature, and concluded that there was a weak positive correlation between watching sports and feeling stressed.

**Fostering Student Empowerment and Community Engagement:
The Impact of Student-Led SWAP Programs on
Underrepresented College Student Success**

**Adalyn Watkins, Ramya Hemphill,
Alexa Driskell, Ailiyah Williams,
Jalacia Outlaw and Trevor Kinlaw**

Sponsors: Dr. Jamie Gilbert and Dr. Arrington Stoll

A Purpose (SWAP) programs on underrepresented college students in higher education. It focuses on how SWAP programs foster social consciousness, leadership, and entrepreneurship, contributing to student empowerment and engagement. The research methodology included a literature review of comparable programs and a comparative analysis of SWAP chapters at Valdosta State University and Central Washington University, utilizing surveys, interviews, and document analysis to assess their achievements. Findings reveal significant social, personal, and academic benefits for participants, enhancing critical thinking and community engagement. These results offer effective strategies for universities to implement similar initiatives, highlighting SWAP programs' role in improving retention among underrepresented students. Given the challenges to undergraduate retention due to various barriers, the study emphasizes the importance of extracurricular experiential learning projects like SWAP in increasing student commitment and success in higher education. This research underscores SWAP programs' vital role in empowering underrepresented students and serving as a critical tool for their academic engagement and retention.

Department of Music

Florence Price: Adoration and the Lost Catalogue

Alysia D. Johnson

Sponsor: Dr. Kristin Pfeifer Yu

Florence Beatrice Price was a brilliant composer of the early 20th century who created hundreds of musical compositions for piano, organ, strings, symphonies, etc. Price's Symphony No. 1 in E Minor premier granted her a breakthrough with the Chicago Symphony Orchestra in 1933, becoming the first black woman to have her composition performed by a major orchestra. However, Price still struggled with recognition throughout her lifetime. Following her death in 1953, many of her works and catalogue were lost. Fortunately, in 2009, G. Schirmer, a music publishing company, found much of her catalogue in an abandoned house in Illinois. For this presentation, we will dive into her life, works, and lasting influence as a black pioneer in the world of composers. Near the end of this presentation, I will also present a recording of my interpretation of Price's "Adoration," accompanied by Kevin Juarez on piano. This piece was originally composed for church organ, but has since been arranged for violin and piano, viola and piano, and orchestra. This recording will showcase Prices remarkable use of music theory, compositional techniques, and devotion to create this piece.

Philipp Scharwenka's Trio for Violin and Viola and Piano in E Minor, OP.121.Movement 1

Benjamin L. Suarez, Sergio A. Sabillon and Erick M. Rubio

Sponsor: Dr. Joshua Pifer

College of Arts, Music

Philipp Scharwenka was a German-Polish composer and teacher of music who was born February 16th, 1847, in Samter, Prussia. He is well known for his chamber works, writing two piano trios, two trios for violin, viola, and piano, two violin sonatas, one viola sonata, one cello sonata, two string quartets, and one piano quintet. Even though Scharwenka is considered a romantic composer, his compositions capture dreamlike impressionistic inflections which can be observed more in composers such as Claude Debussy and Maurice Ravel from the late 19th and early 20th century. Our trio consists of the following members: Sergio A. Sabillon (junior BM) on the violin, Benjamin Leonardo Suarez (junior BM) on the viola, and Erick M. Rubio (freshman BM) on the piano. We will be performing the 1st movement of Philip Scharwenka's trio for Violin and Viola and Piano in E minor, Op. 121. When you listen to us play this trio you will hear the voice parts intertwine with each other creating a beautiful and surreal sound, while having moments of tension and dissonance to create drama and passion.

**Piano Quartet in E-flat Major, K.493, II.
Larghetto by W.A. Mozart**

Kevin Juarez, Alysia D. Johnson, Dylan Hieb-Schatzberg and Anthony Shands
Sponsors: Dr. Joshua K Pifer and Prof. Xin-Yu Chang
College of Arts, Music

For this presentation, we will be performing W.A. Mozart's "Piano Quartet in E-flat Major K.493," II Larghetto. Composed in 1786, this composition was made for piano, violin, viola, and cello. The quartet consists of 3 movements: I Allegro, II Larghetto, and III Allegretto. In today's performance, we will be performing the Larghetto. The Larghetto is a slow and lyrical movement. The melody alternates back and forth between the piano and strings, giving the sensation of a conversation is happening between parts. The piano quartet consists of undergraduate students working together for the first time. Performers are Kevin Juarez, piano, Alysia Johnson, violin, Dylan Hieb-Schatzberg, viola and Anthony Shands, cello.

Department of Theater

The True Cause and Effect of Chicano and Cholo Fashion

Dayanara Dominguez

Sponsor: Dr. Chalise Ludlow

College of Arts, Theater

Throughout the history of Latin culture, the names of Chicanos and Cholos have been run through the mud of judgment and misinformation. Many who hear these names have asked, “What is the difference?” I have asked that same question, and these two things are what inspired me to create this poster about the true cause and effect of Chicano and Cholo fashion. I decided to make a poster about this topic not only because of a question, or because I favored the style, or because it was for a grade, I wanted to talk about this topic because throughout my life. In and out of school, I rarely heard or learned about people that looked like me or had the same ethnicity as me, I only ever heard of Ceaser Chavez or Frida Khalo and saw some examples in heavy stereotyped movies or cartoons. I also wanted to share this poster because my community is not talked about enough. This was truly a lengthy process, each time I tried to find information from various websites I was given everything but a straight answer, it was so bad that everything I read began to repeat itself, yet I was able to pick out important facts that were short but told the most. Using what I found to the best of my ability I was able to find the answer to the Chicanos and Cholos differences and the reasons behind them, I was able to finally create something that proves many opinions wrong, and I was able to find the true cause and effect of Chicano and Cholo fashion.

Harvey Langdale, Jr. College of Business Administration

Accounting

The Socioeconomics of a Country's Transformation from Developing to Developed Nations

**Idara A Essienumoh
Sponsor: Dr. Mohammad Movahed**

There is adequate evidence on how long a country takes to rebuild its nation and economy, especially after going through war or being under the control of another country. For many countries, it took about ten or twenty years to reconstruct their nation, but there are interesting components about how Singapore created its wealth so efficiently that it is known as one of the richest, well-developed countries today. Singapore has made tremendous growth in its global and digital economy. From its political infrastructure to its social environment, this country is living in the future while other countries are still struggling and lack technological resources, which could be very beneficial in the 21st century. Singapore has embraced many economic factors that other developed countries continue to lack, such as taxes, inflation, and ethnic inequality. There are many attributes to learn from the country's growth process.

Importance of College Faculty having a Certification and the Impact that Provides to Students in the Accounting Field

**Saul J. Guzman
Sponsors: Dr. Raymond Elson, Cori O. Crews DBA, CPA,
and Dr. Casey Colson**

This project focuses on the professional licenses and/or certifications held by accounting faculty and the impact this could have on the accounting pipeline. The accounting profession is facing a growing shortfall in the number of students majoring in accounting. This may be attributed to a lack of role models in the classroom, specifically accounting faculty with prior work experience outside academia. Such faculty often obtain professional certification and ensure students follow a similar path. Our goal is to better understand the recently diminishing number of students in accounting programs, as well as those seeking certification in the country and the state of Georgia, by studying the influence of faculty certifications on accounting students. To explore this, we utilize Hasselback's 2023 accounting faculty data to quantify the percentage of faculty holding professional certificates within the U.S. and the state of Georgia.

**James L. and Dorothy H. Dewar College of
Education and Human Services**

Communication Science and Disorders

Acoustic Properties of Connected Speech

Stephanie G. Lopez, Ashtyn L. Ray

Sponsor: Dr. Matthew Carter

Studies have shown that habitual pitch (fundamental frequency) can be affected by numerous text-related factors including sentence length, sentence type, and communicative intent. The Rainbow Passage and the Grandfather Passages are two passages that are often used interchangeably to elicit measures of pitch. However, no study has systematically investigated if the two passages are in fact similar in the results that they yield. The purpose of the current study was to describe whether frequency, as measured by the correlate of pitch, is similar when extracted from both of these passages. Each college-aged female participant was presented with The Rainbow Passage and The Grandfather Passage and asked to read them aloud. An isolated vowel was also produced as a means of control for fundamental frequency. The pitch was then measured at similar points in each passage. Results indicated there were no significant differences between the results that were obtained when participants were reading the two different passages. This indicates these two measures should be considered approximately equivalent and can be used interchangeably. Clinicians should be free to utilize whichever passage proves to be more convenient during their assessment. Further studies could investigate other uses for these passages provide the same results.

Department of Teacher Education

House Bill 1084 and its Impact on Teaching and Discussing Topics Related to It

Race within Georgia's Public Schools
Corey L. Cox
Sponsor: Dr. Karen Terry

The passing of House Bill 1084 has brought out significant disagreements about how the topic of race should be addressed within Georgia's public schools. HB 1084 was introduced with the intention of controlling how controversial topics related to race, gender, and other social issues can be taught about within the classroom. Although HB 1084 has a wide range of effects, the subject that is most affected by it is social studies because of the historical content that must be taught. The bill does nothing to prevent the teaching of subjects such as slavery or civil rights, but it does attempt to control the scope of conversations that can be had related to these topics. Proponents of the law argue that it helps to create an inclusive educational environment by preventing discussions that may cause students to feel guilt or resentment. However, House Bill 1084's critics suggest that it prevents important discussions about topics such as systemic racism and social justice. HB 1084 was passed in 2022 but it remains controversial to this day due to the impact that the law continues to have on Georgia's public schools.

An Intersection of Race and Religion: Teaching Social Studies under GA HB 1084

Archer K Hathaway
Sponsor: Dr. Karen Terry

House Bill 1084 is a relatively new bill placed upon educators that concerns the teaching of divisive topics in Georgia public school. My topic is the relation between this bill and religion in today's classroom. I will provide examples of how we as educators in middle school history, can navigate our curriculum without making divisive remarks concerning religion. House bill 1084 addresses religion by stating the following, "(D) An individual should be discriminated against or receive adverse treatment solely or partly because of his or her race;". This statement says that students shouldn't be discriminated against based partly on race or any other factor such as religion. Religion is divisive because educators can make a student feel left out or that they purposely taught in a way that they receive hate. There are several standards in middle school history that can cause issues to arise. It is the job of educators to navigate these standards without communicating them in a divisive way.

Examining the Impact of House Bill 1084: Critical Race Theory in K-12 Classrooms

Macie H. Green
Sponsor: Dr. Karen Terry

This research dives into the complicated relationship between Critical Race Theory and legislative actions such as House Bill 1084. More specifically, this research paper explores and diminishes the common misconception that Critical Race Theory, an advanced legal framework analyzing systemic racism, is part of the standard K-12 curriculum. Taking a look at House Bill 1084 and Critical Race Theory, and the relationship between the two reveals varying implications. Supporters of Critical Race Theory argue that it is necessary to address systemic racism by encouraging critical thinking and knowledge of historical injustices. On the other side of this, supporters of House Bill 1084 argue that Critical Race Theory creates and encourages division and resentment. Through the study and analysis of curriculum standards, classroom practices, and policies, this research paper helps clear the misconception and shows the reality of Critical Race Theory not being taught in K-12 classrooms. This research paper explores the following key points: the history and ideals of Critical Race Theory, the background and factors behind House Bill 1084, and the socio-political implications of banning Critical Race Theory from all educational curricula.

Restructuring Education: Teaching Race with House Bill 1084

Kaemon R. Hursey
Sponsor: Dr. Karen Terry

The legislative House Bill 1084 holds teachers accountable under the discussion of racism throughout the history of education. It halts any discussion of topics that are considered “divisive” while also creating unclear lines as to what educators are supposed to teach. The bill also requires educators to refrain from expressing personal beliefs over politics and racism throughout the classroom while also prohibiting discussion about fundamental racism found within the United States. This paper examines lines that the bill creates for all social studies teachers within standards that cover race. This paper questions the legitimacy of the bill when considering classroom lectures about race and any discussion that may evolve from it. The bill is explored through the lenses of potential biases that are within the consequences of covering “divisive” concepts. This analysis also holds up the rights that social studies educators have when discussing factual events and the contingency that the bill has to question facts. Can teachers have a historical debate within the classroom? How can educators facilitate a classroom debate with the bill on certain topics such as Brown v. Board and the Civil Rights Movement?

Exploring Teacher Perceptions of Classroom Management: Insights from Local School Districts

LeAnna Keller

Sponsor: Dr. Forrest Parker III

This presentation at the Valdosta State University Undergraduate Research Symposium aims to delve into the intricacies of teacher perceptions regarding classroom management, a pivotal aspect of educational dynamics. The study harnesses a comprehensive survey conducted across various local school districts, targeting educators with diverse backgrounds and experiences. This methodology facilitates a multifaceted exploration of how educators perceive, implement, and evaluate classroom management strategies. Key findings from the survey may reveal a spectrum of perceptions, highlighting the influence of factors such as teaching experience, grade level, and class size on classroom management approaches. The research underscores the diversity in teachers' beliefs about effective discipline, student engagement, and the creation of a conducive learning environment. Notably, the study identifies common challenges faced by teachers, including handling disruptive behavior, and maintaining student attention. This research contributes to the broader discourse on classroom management by offering empirical insights from the teachers' perspective, thereby enriching our understanding of effective educational practices and the challenges educators face in contemporary classrooms. A significant aspect of this presentation is the juxtaposition of the official procedures against the lived experiences of teachers and students. This comparison reveals gaps between policy and practice, and helps identify systemic barriers that hinder effective special education delivery. The presentation will also discuss the broader implications of these findings, including the impact on student learning outcomes and teacher efficacy. In conclusion, the study proposes recommendations for policy reform and practical strategies to improve the accessibility and quality of special education services in Georgia. This presentation not only contributes to the academic discourse on special education but also serves as a call to action for educators, policymakers, and stakeholders to collaboratively address the roadblocks identified in this study.

Harnessing the Power of Social-Emotional Learning (SEL) in Elementary Classrooms: Strategies for Educators

Cassidy M. Huebener
Sponsor: Dr. Forrest Parker III

Social-Emotional Learning (SEL) has emerged as a cornerstone in the development of well-rounded and emotionally resilient students. This research presentation delves into the significance of SEL in elementary education, highlighting its impact on academic success, emotional well-being, and long-term life outcomes. Through a comprehensive review of current literature and empirical studies, this study outlines the critical components of SEL—self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. It further explores the role of educators in fostering these skills within the classroom setting.

Practical examples and evidence-based strategies will be showcased, demonstrating how elementary teachers can seamlessly integrate SEL into their daily teaching practices. These include the creation of a supportive learning environment, the implementation of SEL curricula, and the use of interactive activities that encourage empathy, cooperation, and emotional regulation among students. The presentation will also address the challenges educators face in implementing SEL and propose solutions to overcome these obstacles.

By providing actionable insights and tools, this presentation aims to empower teachers to effectively cultivate social and emotional competencies in their students. The ultimate goal is to equip young learners with the skills necessary to navigate their emotions, build healthy relationships, and thrive in a complex, ever-changing world. This research underscores the transformative potential of SEL in shaping future generations and calls for its prioritization in educational settings.

Integrating Social-Emotional Learning Strategies for Effective Classroom Management: A Guide for Elementary Teachers

Rebecca Taylor

Sponsor: Dr. Forrest Parker III

Effective classroom management is crucial for fostering a positive learning environment conducive to academic growth and social development among elementary students. Social-emotional learning (SEL) strategies offer valuable tools for educators to address various classroom management challenges and promote positive behavior. This poster presentation explores the integration of SEL strategies into elementary classrooms to enhance classroom management practices. Drawing upon research and practical experience, the poster will provide insights into the importance of SEL in addressing behavior issues, fostering a supportive classroom community, and promoting student engagement. Additionally, specific SEL techniques and interventions tailored for elementary settings will be discussed, offering practical guidance and examples for teachers to implement in their classrooms. By emphasizing SEL strategies, elementary teachers can cultivate a nurturing environment where students feel valued, supported, and empowered to succeed academically and socially.

Department of Human Services

History Talent Development Abstract

Rosieana Elizabeth Johnson

Sponsor: Dr. Ophelie Desmet

This qualitative study investigates the origins and pathways of interest in history as a profession, aiming to illuminate when and how individuals develop a passion for history. Surveying 145 participants in history and employing content analysis, the research sought to uncover formative experiences, influential figures, or significant events that ignite initial interest and propel individuals toward pursuing history as a career. Among respondents, the majority were white (83.45%), followed by Black or African American respondents (3.45%). Women comprised the majority (51.03%), followed by men (42.76%), with a small number identifying as non-binary or third gender (1.38%). As for age, the largest proportion fell within the 55-64 age range (26.90%), closely followed by the 35-44 age range (24.83%). The findings inform the development of programs and initiatives to nurture historical talent from an early age. Teachers and professors were significant motivators for many participants, providing support, guidance, and valuable connections within the field. Furthermore, an inherent interest in stories and storytelling, coupled with curiosity and a thirst for knowledge, emerged as common threads driving personal passion for history. Additionally, participants frequently cited participation in history enrichment programs as instrumental in shaping their career trajectories. Understanding these factors is crucial for designing effective educational interventions and mentorship programs to cultivate historical talent.

The Gifted Gamble

Makayla D Weeks

Sponsor: Dr. Forrest Parker III

“The Gifted Gamble” is an insightful oral presentation that delves into the long-lasting implications of early testing for giftedness on individuals. This research aims to explore how identifying gifted children at a young age influences their academic, social, and emotional development throughout their lives. The central question of this study is: How does the predominant practice of testing for giftedness in early childhood impact the long-term development of individuals, taking into account both the potential benefits of customized educational experiences and the possible disadvantages of early labeling and fixed expectations? The presentation will critically examine the dual-edged nature of early giftedness testing. On one hand, it considers the advantages, such as tailored educational pathways that cater to advanced learning needs, thereby fostering academic excellence and personal growth. On the other hand, it scrutinizes the potential drawbacks, including the risks of early labeling, which can lead to fixed expectations, undue pressure, and social isolation. Using methodological approaches, this research integrates a comprehensive review of existing literature with qualitative analyses of first-hand accounts from individuals who have experienced early giftedness identification. The study aims to provide a balanced perspective, acknowledging the complexities and varied outcomes of early giftedness testing. The expected outcome of “The Gifted Gamble” is to offer a subtle understanding of how early identification of giftedness can shape an individual's life trajectory. This presentation seeks to inform educators, parents, and policy-makers about the long-term impacts of this practice, encouraging a more thoughtful approach to the identification and support of gifted children. Ultimately, this research contributes to the ongoing dialogue on how best to nurture the potential of every child, recognizing the diversity in their developmental journeys.

**College of Humanities and Social Sciences
Department of English**

Long-term Effects of Emotional Abuse in Wildwood by Junot Díaz

**Skylar P. Morris
Sponsor: Dr. Ubaraj Katawal**

In this essay, I will discuss the long-term effects of emotional abuse and psychological maltreatment exhibited in the short story Wildwood by Junot Díaz from his novel The Brief Wondrous Life of Oscar Wao. I will discuss how experiencing psychological maltreatment and emotional abuse during key developmental years in one's childhood can leave a negative impact on their adult psyche. As I break down and analyze the parent/child relationship exhibited in the short story, Wildwood, I will apply a variety of concepts and theories to further affirm my argument. I will attempt to use James Garbarino, Edna Guttman, and Janis Wilson Seeley's concept of psychological maltreatment, Freud's concept of psychosexual stages of developmental growth and his theory of the unconscious mind, as well as applying the literary device, tragedy to the story. By doing so, I will affirm that the maltreatment and emotional abuse in developmental years gravely affects the child well into their adult years. These experiences often leave behind mountains of trauma to work through, as well as other long-term ailments such as chronic fatigue, anxiety, depression, feelings of worthlessness, and more. I will use the short story Wildwood to exemplify these points throughout the story and use the characters as examples of these theories and experiences.

The Hypocrisy of The American Death Penalty in Literature

**Evie L. Webb
Sponsor: Dr. Ubaraj Katawal**

This research paper neither endorses nor opposes the death penalty, but instead delves into a critical examination of the concepts of justice and morality as they intersect with the enforcement of capital punishment in The United States of America. This study scrutinizes the inherent hypocrisy within the death penalty process and its causal factors. Focusing on three distinct crimes, each perpetrated by different individuals. Only two of the cases resulted in the imposition of the death penalty. This paper systematically explores the notion of justice in these cases, prompting a fundamental question: Were these crimes truly deserving of the death penalty, and if so, were the accused justly placed in such a position by the guardians of the law? The paper is guided by the insightful perspective of Shane Claiborne, who contends, "True justice is restorative. It heals wounds. The death penalty only creates new wounds," Throughout this paper, the research navigates the intricate web of morality, justice, and the implications of capital punishment.

**“God wants to use you”:
The Perversion of Religion in Postmodernist Works**

**Amber G. Velasquez
Sponsor: Dr. Adam Wood**

This essay aims to examine the way in which postmodernist works, specifically Theresa Hak Kyung Cha’s *Dictee* and Bret Easton Ellis’ *Less than Zero*, utilize religious rhetoric and ceremonies in order to reveal the oppressive and corrupt nature of organized religion. Though vastly different texts, through looking at the use of sexual language in the works and drawing on research regarding the ways in which organized religion has been used as a means of exploitation and oppression, this essay analyzes the purpose and impact of these sexualized recounts of religious sermons. In regards to Theresa Hak Kyung Cha’s *Dictee*, an examination of the communion scene relayed in the novel to analyze and interpret Cha’s commentary on the patriarchal forces of organized religions will be conducted with references to organized religion’s historical impact and the structure of organized religion in comparison to the patriarchal structure of society. Similarly, Bret Easton Ellis’ *Less Than Zero* contains two particular scenes in which religious rhetoric is purposefully sexualized, highlighting an exploitation of the masses and a nature of organized religion that has been corrupted by wealth and income.

**Department of History, Philosophy, Religious, and
Interdisciplinary Studies**

History

All Power to the People: Ideas and beliefs of the Black Panther Party

**Jalen L Mercer
Sponsor: Melanie Byrd**

The Black Panther Party was a radical Civil Rights movement of the late 60s and early 70s with its origins in Oakland, California. By 1966, many African Americans felt that the Civil Rights Movement of the early 1960s had achieved all it could, and new, more demanding methods were needed. It was this environment that birthed the Black Panther Party. The Black Panthers were a unique movement, well suited for the historic moment in which it found itself. The legacy of the Black Panthers is a complex one. Some view them as a group of violent vigilantes, while others view them as a needed step toward furthering the cause of Civil Rights. Using the official Black Panther newspaper, FBI records, and several contemporary sources, this paper explores a more holistic view of the Black Panther Party, taking a look at the ideas that animated the Party and propelled it to a national platform. The paper combats the not uncommon claim that the Black Panther Party was a socialist movement and instead defines them as left-wing Black Nationalist.

Martin Luther and Humanism

Philip C. Maddox

Sponsor: Dr. Sebastian Bartos

Beliefs of humanism are centered around human nature; the humanists' discussions often revolve around understanding people's capability and capacity for purity. In contrast to the Catholic dogma, Martin Luther viewed humanity as being incapable of saving itself. This paper argues that Luther's pessimistic view of human nature and its free power to obtain redemption should be analyzed in the context of late Renaissance humanism. The argument will be presented through examining Luther's core beliefs and comparing them with iterations of humanism in Italy and northern Europe. Desiderius Erasmus' Catholic views will also be analyzed to demonstrate the corresponding interest in humanism in the persisting Catholic tradition of that period. Luther's famous Ninety-Five Theses associated with the outbreak of the Protestant Reformation is the primary list of points made with an intention to challenge the papal doctrines of salvation. It will be argued that the theses should be understood in the context of the humanists' emphasis on individuality and personal spirituality propagated by the liberal arts education. While traditional scholasticism directed clergymen to study divine purpose, Christian humanism looked towards helping society in the temporal world. It will be argued that Luther's views expressed in his letters, theological writings and public statements represented the latter.

The 1527 Sack of Rome and Its Cultural and Political Consequences

Erik Marine

Sponsor: Dr. Sebastian Bartos

The infamous sack of the city of Rome marked a high point in the War of the League of Cognac which had been raging throughout Italy for years. With so many major countries contributing to this conflict, such as France and the Holy Roman Empire, the Italian peninsula became the unfortunate victim of endless suffering and destruction caused not only by outsiders, but also by political forces within Italy. The Papal States, the seat of papal authority and one of the largest ruling bodies in Italy, was led by an authority that spelled the end of late medieval Rome. It will be argued erroneous political decisions and a general carelessness concerning the population of Rome led to the apocalyptic state of the city after it had fallen to German troops. The city lost a significant part of its population from disease and neglect, even after the assaulting army had finished looting, destroying, and killing its way through the ancient capital. The primary sources demonstrate that the combination of political turmoil and chaos within the city left behind a ruined populace with no hope of a revival save the change brought about by eager workers and enlightened thinkers.

Censorship, Discursive Cleansing, and Suppression of Information in the U.S.

Izabella R. Ramaker
Sponsor: Dr. Sebastian Bartos

In the summer of 1943, German forces exhumed the remains of over 22,000 Polish prisoners of war located on the periphery of Smolensk, Russia, in a nearby forest of Katyn. All evidence of the murderous orchestration pointed to the evidently guilty Soviet Union, who maintained vehement denial of having any involvement in the slaughter for several decades. The consistent censorship of Katyn was executed in numerous countries, including the United States. The United States found itself a culprit in discursively cleansing any and all knowledge regarding Katyn, as to not harm relations with an already uneasy Soviet Union. This paper explores the brazen suppression of newspeak, knowledge, and propaganda of the Katyn Massacre from the American standpoint. In this paper, I explore the blatant expungement of all discussion regarding Katyn from the American media, as well as investigate the reasons behind the United States willingness to comply with the oppressive Soviet Union. The research conducted in this paper concurrently highlights Polish Americans' suffering caused by palpable censorship and the officials' lack of consideration for Polish political interests and sentiments.

Soul Food: A Transformation into Modern History

Isabelle F. Reimer
Sponsor: Dr. Melanie Byrd

In 1965, Soul Food was defined in The Autobiography of Malcolm X. This grouping of words together would define a sub-section of culture to exist in America beginning with slavery and using slaves in domestic terms. The identifying characteristics of Soul Food intertwined with Southern cuisine blur the lines of the origins of this food culture. Throughout Southern history, Soul Food has been an underlying influence in culture and society, over time, through slavery, domestication of cuisine, and the exploration of untold narratives Soul Food continues to change meaning. Recipes have displayed the diaspora of African American culture. Through the reproduction, Soul Food recipes are rebranded for a predominantly white audience. A majority of Southern foodstuff is directly related to the influence it has on slave origins. This links both white and black southern cuisine together. The understanding of Southern Cuisine, specifically Soul Foods, will always be based on a person's lived experiences and personal interpretations. Understanding how history got to this point is extremely tricky. There are many points of influence from geography foods, cookbooks, pop culture magazines, and metropolitan cities. The recipes may be slightly different now, but history has demonstrated Soul Food will always hold a place as traditional American Cuisine not just Southern.

Interdisciplinary Studies

Cultural Importance of De'VIA Art

Grayson J. Friedman
Sponsor: Dr. Lavonna Lovern

The objective of this research is to bring together available information surrounding De'VIA and highlight the cultural impact the art has on d/Deaf and hearing people. Additionally, an objective of the research is aimed to educate all readers about a not well-known subject that is prevalent for the expression of a culture of people. The main areas of focus in the following paper are the De'VIA manifesto, De'VIA types, history of Deaf art, and cultural significance and understanding. A few pieces of De'VIA across several mediums will be analyzed with the intent to show the vastness and versatility of the art type. Nearly all research included are primary sources from De'VIA artists or those very closely involved with the movement. Once in view, these topics will lead to better comprehension of De'VIA and how all cultures/communities are involved in the art forms success both visually and culturally.

Building Strong Foundations: Enhancing Teacher Preparation Programs for Empowered Education

Jeff Benjamin
Sponsor: Dr. Lavonna Lovern

Having attended the *Branch Alliance for Educator Diversity (BranchED)* conference, this project will examine several of the tools designed to assist educators in diversifying their approach to classroom teaching. Throughout the conference and workshops, key themes emerged that were deemed necessary to enhance diversity including collaborative and responsive pedagogy, innovative strategies of communication, and supporting educator resilience. Specific examples from *Branch ED* will be discussed and analyzed to provide a critical understanding of classroom student diversity and how best to meet the needs of each student.

Philosophy

Unger's Multiverse

Christopher A.J. Simpson
Sponsor: Dr. Lavonna Lovern

The use of skepticism in philosophy continues to bring into question any possibility for “certainty”, which is seen as threatening to some who wish to claim “knowledge”. While many philosophers have opted for a sort of “partial” skepticism as a methodology, which may allow for some types or levels of “certainty”. This paper will examine Peter Unger’s Argument for Skepticism. The paper will begin with a discussion of Unger’s theory that certainty and dogmatism stand in an epistemic relationship to each other followed by an analysis of Unger’s argument for universal skepticism and his use of “attitudes” to support a denial of certainty and the role of skepticism plays in philosophical multi-worlds ideology. To support this discussion and help with understanding, the paper will use Marvel concepts of the multiverse criticism of “certainty”. The paper will conclude with a discussion of some implications for social and political practices in the adoption of an “Unger Multiverse”.

Dark Matter vs. Modified Gravity

Alexzandria Navedo
Sponsors: Dr. Lavonna Lovern and Dr. Billy Quarles

Current scientific data indicates that galaxies are rotating faster than should be the case given the conservation of motions. This observation indicates that additional matter must exist to cause the rotation, but such matter has yet to be observed. Given the dilemma, some scientists have posited the existence of dark matter to account for the missing “mass”. It is further postulated that dark matter particles cannot be observed with traditional scientific measurements including “light” detection models. Over the last fifty years, scientists have been divided on the acceptance of theories involving dark matter and the need to reassess gravitational theories. This study is a literature review of the differing arguments in preparation for later mathematical computational work. This paper will analyze the differing arguments and establish initial hypotheses that will be tested experimentally and mathematically in the next stage of this research.

Considering the Death Penalty and Ethics

Oscar L. Prieto

Sponsor: Dr. Lavonna Lovern

This project will begin with a basic look at ethical considerations involving the death penalty and then focus on theories that use Mill to support the death penalty. Often, these interpretations of Mill's ethical theory offer a misreading of Mill in that they do not consider Mill's two main points: 1) all people must be considered to be equal without exception and 2) an individual or a group cannot be sacrificed for another group. In other words, an individual or a minority cannot be sacrificed for the majority. So, majority rule should not be part of Mill's consideration of the death penalty. In order to further analyze Mill's ethics and the death penalty, the project will look at case studies, what has been called the arbitrary application, racial statistics, and concepts of revenge to support a better reading of Mill's theory and how it should be applied to the death penalty.

Department of Modern and Classical Languages

Statues and Monsters: The Hidden Mexican Identity in the Story "Chac Mool"

Yoav Golan

Sponsor: Dr. Ericka Parra

In his short story Chac Mool, the author Carlos Fuentes identifies and presents certain aspects of the Mexican national identity of the 1950's. Using allusions, symbolism and metaphors, the author reflects about the origins of Mexican identity: on the one hand, it is pre-hispanic—Aztec, Maya, Mexica, Toltec, etc.—and on the other it is very Spanish—it emphasizes Catholicism and the Bible. The narrator, Filiberto, also alludes to certain important times in Mexican history as a reflection on the changes in its national identity since the time of the Mexican Revolution, as well as older times, like the Spanish conquest. These allusions reflect the complexity of finding an origin to Mexican identity roots in its culture. Using literary devices and history, Fuentes shows how the Mexican identity hides its indigenous past and keeps its gaze toward the future, modernization and Western society; it reflects a pride in European culture and shame of the indigenous in its cultural DNA. I believe it is important to note that this attitude towards the indigenous aspects of Mexican society has since changed, especially in the 21st century, when indigenism and mestizaje are becoming a point of pride rather than embarrassment. It is thanks to authors like Fuentes that these voices could have emerged and shown pride in the indigenism of Mexican people.

Las Cantigas de Santa María: Restoring the Virgin Mary's Humanity through a Medieval Masterpiece

Students: Lauren I. Mariah
Sponsor: Dr. Grazyna Walczak

Within the tradition of the medieval troubadours, the beloved and beautiful lady was melodically idolized; however, some lyricists foreswore immortalizing their earthly loves in favor of singing the praises of the Virgin Mary and expressing their devotion to her. Among these Marian works, the Cantigas de Santa María from the court of Alfonso X is remarkable, providing a treasure trove of four hundred and twenty songs that combine beautiful melodies, richly varied poetry, and exquisite illuminations to glorify the Santa María and reaffirm her importance to the entire Christian population of war-torn Medieval Spain. Composed at a critical moment in the Reconquista, when the intellectual and cultural life of the Visigoth court was in full bloom after the previous centuries of the *Convivencia*, these songs offer a fascinating glimpse of the changing perceptions of both Santa María and the human race. Where conventional Catholicism exalted her least human qualities, in Las Cantigas, she becomes a sympathetic guardian, a forgiving mother, the practical salvation of common people, and the most exquisite flower of humanity. This project explores the humanization of the Virgin Mary as it is expressed in las Cantigas and the societal importance of this depiction.

Kaleidoscopic Threads: Afro-Spaniards and Afro-Latinos Cultural Impact on the Identity of Spanish-Speaking Societies

Breanna N. Johnson
Sponsor: Dr. Grazyna Walczak

This research delves into the diverse cultural contributions of Afro-Spaniards and Afro-Latinos, exploring their profound impact on Spanish-speaking communities. By tracing the historical trajectory of these communities, the study underscores the intricate fusion of African cultures within the broader cultural landscape. Through publicly accessible media, it highlights the substantial influence of Afro-Spaniards and Afro-Latinos in shaping realms such as literature, academia, and the arts. The paramount objective of this study is to foster a deeper understanding and appreciation for the integral role played by Afro-Spaniards and Afro-Latinos in shaping the rich and varied cultural identity of the Spanish-speaking world.

(In)Evitable? Perspectives on Marriage chez the 18th Century French Heroine

Lauren I. Mariah
Sponsor: Dr. Kelly F. Davidson

From a modern perspective, the 18th century woman is often portrayed a victim of her era, family, and social conditioning, all of which doomed her to marriage. We too easily forget the living intellects and unwritten voices that made her real—a travesty that even 18th century authors began to challenge. This illusion of the inevitability of marriage was frankly disputed by l'Abbé Prévost through his avant-garde heroine in *Manon Lescaut*, and by Marivaux in his comedy *Le jeu de l'amour et du hasard*. These heroines turn the perceived social order on its head, laying the prejudices and workings of their society bare for observation. This project combines readings of the original works and subsequent literary criticism to analyze the way in which these authors critiqued the societal standards through their heroines' views on marriage, their depiction of the societal, familial, and economic pressures that these women confronted, and their differing methods of resolving this dilemma. In an era of increasing recognition of the role of women, a greater understanding of these heroines, and the unnamed women who inspired and are represented by them, is essential to understanding our own historic and literary past as well as our present selves.

Exploring the Expression of the Sentiment of *Enamoramiento* in Literary and Musical Works through Various Movements in Spain

Sophia A. Newcamp
Sponsor: Dr. Grazyna Walczak

For all of history, humans from various cultures have struggled to express their exact thoughts and feelings because of the limitations of spoken language. The use of methods, such as rhetorical figures and rhythm, allows an individual to convey a more accurate portrayal of their emotions and overcome the barriers of basic language. Yet, the ways of expressing apparently the same sentiment are infinite and become precious contributions to the richness of cultures throughout human history. This research focuses on comparative reading of the theme of *enamoramiento*, the process of falling in love romantically and the state of being enamored, throughout a variety of literary and musical works from Spain's various philosophical and cultural movements. Comparing works from the perspective of different artists of different periods in time allows for a deeper understanding of both the general articulation as well as the many unique expressions of *enamoramiento*.

Senegalese Literature

Sarah Jayroe

Sponsor: Dr. Kelly F. Davidson

Senegalese literature finds roots in an ongoing history of oral storytelling and maintains its status today as an important opportunity for political and socioeconomic discussion, historical reckoning, and international commentary. African literature has suffered from a long history of colonialism, slavery, and genocide, leading to the near or total loss of languages, literature, and the peoples to whose cultures they belonged, while providing little more than secondhand accounts of literary works that are now, through purposeful or incidental means, lost to time. This presentation discusses the historical foundations of Senegalese literature through its oral traditions, historical struggles, and modern interpretations by exploring the still-living traditions of record keepers and storytellers in Senegal while also platforming Senegalese authors and their works from the nineteenth century onward. Particularly, this look into modern Senegalese literature sees focus placed on the present-day relationships between African countries and the European powers that colonized them and profited from slavery at great human, linguistic, and cultural expense. Through the poetry, literature, and film of Senegalese writers and creators, this presentation aims to educate on the lingering effects of colonial imperialism from the viewpoint of those still operating in its wake and the self-liberation through art of the literal and metaphorical lived histories of Senegal and its diaspora.

Native American and Indigenous Studies

Mitákuye Oyás'iy: An Analysis of Native North American Cosmologies and Western

Cecilia G. Kee

Sponsor: Dr. Shelly Yankovskyy

Ethnoscience, or Traditional Ecological Knowledge (TEK), understands the importance, values, and credibility of traditional cultural narratives and practices of native peoples. “*Mitákuye Oyás'iy*,” is a Lakota saying meaning “we are all related,” and not only reflects TEK, or ethnoscience, but also the Western Science belief that all life on Earth shares a common ancestor. Many Native American cosmologies include a “Creator,” the recognition that plants and animals are related to humans, and therefore should be treated as such. Native ethnoscience features principles of “reciprocity,” and land stewardship. These TEK beliefs are often in opposition to the general perspective of Western beliefs that see the natural world as being created for human use. Where and why do these differences originate? How do Native American origin stories align with Western theories of Native American migration and origin? The purpose of this research is to analyze the ways that Native North American ethnoscience or TEK and Western Scientific ideas complement or diverge from one another and investigate how both ways of thinking are synthesized.

Department of Psychological Science

The Effect Candy Has on Happiness and Memory

Eldred B. Jones

Sponsor: Dr. Mark A. Whatley

Chocolate consumption is anecdotally associated with an increase in happiness (Meier, et al. 2017), but there is sparse research examining the effect of peppermints. This study examined the effect this candy has on happiness scores self-reported by participants, as well as their ability to recall information. Male and female participants were randomly assigned to the peppermint (n = 8; n = 8, respectively) or no peppermint conditions (n = 8; n = 8, respectively). After answering demographic questions, they indicated their overall level of happiness and then given a list of 10 words to study for 30 s and then recalled as many words as they could after a 10 s break. As predicted, participants in the peppermint condition reported more happiness compared to those in the no peppermint condition. As predicted, participants in the peppermint condition recalled fewer words compared to those in the no peppermint condition. This finding was qualified by a significant interaction indicating that males were more impacted by their ability to recall words in the peppermint condition compared to females. The results are discussed in terms of sensory distractions impacting performance on cognitively demanding tasks, as well as increasing levels of happiness.

Development of an Attitudes Toward the Israel-Hamas War Scale

**Caleb L. Berrian, Elizabeth C. Carter, Mytavia L. Cooper,
Sha’Nyia and N. Ghent**

Sponsor: Dr. Meagan M. Wood Hopkins

On October 7, 2023, the Israel-Hamas War began after Hamas led a surprise attack against Israel in the Gaza Strip. American public attitudes toward the war are mixed, especially along political parties. According to the University of Maryland Critical Issues Poll with Ipsos, most Republicans attitudes lean toward Israel, but Democrats tend to lean toward neither side (Telhami, 2023). The purpose of this study was to develop an instrument to measure attitudes toward the Israel-Hamas War. Participants responded to an initial item pool of statements that measured attitudes towards several aspects of the war between Israel and Hamas. Factor analysis was used to create the final scale. Analyses were conducted examining the reliability and validity of the scale. Additionally, individual differences in areas such as sex, race, year in school, political party, and sexual orientation were examined. Implications and future directions for research are discussed.

Skin Tone

Esmeralda C. Facundo
Sponsor: Dr. Mark Whatley

The attributes and behaviors a person is thought to possess is often an attribution third-party observers make based on that person’s physical appearance, status, skin tone, and sex. This study examined participants' attributions about the skin tone of an Hispanic woman and whether others view her as being fluent in Spanish. Participants, 30 Hispanic/Latinx and 43 non-Hispanic/Latinx, were shown a photograph of a Hispanic woman. The woman’s skin tone was manipulated so that some participants viewed a light skin version of the woman; whereas, others viewed a dark skin version of the woman. Participants then rated the woman on the likelihood she was fluent in Spanish and a number of trait adjectives using a 7-point scale. As predicted, the woman with the darker skin was viewed as being fluent in Spanish by both Hispanic and Non-Hispanic participants. Though, the manipulation of skin color had a greater influence on Hispanic compared to Non-Hispanic participants. As predicted, the woman with the lighter skin tone was viewed as having more class compared to the woman with the darker skin tone. Implications for within-group prejudice and stereotyping are discussed.

Using Hair Cortisol Levels to Understand the Effect of the COVID-19 Pandemic on Stress in Healthcare Workers

Madison R. Williams
Sponsor: Dr. Kristin Kirchner

We investigated the impact of the COVID-19 pandemic, and other stressors, on cortisol in healthcare workers. A combination of self-report and biomarker data was used to help understand how individual differences impacted one's stress response throughout the pandemic. Using biological data, the results of the present research have shed light on the lack of recovery from pandemic-induced stress in healthcare workers. Participants completed an online survey assessing their mental health and their stress levels as a healthcare worker. Using ELISA methodology, cortisol was extracted from hair samples from two time points: the most recent three months and the participant's self-reported "most stressful" months. Participants who indicated that they did not feel recovered from the pandemic showed increased levels of loneliness, depression, anxiety, stress, and burnout when compared to those who did feel recovered. Cortisol levels did not fluctuate between the two time points, nor was there a difference in cortisol between the group who felt recovered and did not feel recovered. These findings could be an important consideration for practitioners: cortisol levels should not be the only indicator when attempting to diagnose high stress, and an approach that takes into consideration the emotional state of the patient should be considered.

Is It Better to Give Than Receive? Effects of Interpersonal Characteristics on Attitudes Toward Oral Sex

Kenzie A. Eikenberry and Selena Garza
Sponsor: Dr. Mark A. Whatley

This research aimed to quantify and examine the attitudes and views of Valdosta State University students on oral sex. This was achieved by distributing a comprehensive 29-item survey using the online software survey platform, Qualtrics, and making it available to the student body. The sample included 121 men and 226 females. The sexualities of Gay, Lesbian, Bisexual, and Queer were combined into one group, LGBT+. A composite score was created from the 11 items measuring attitudes toward performing oral sex and the 10 items measuring attitudes toward receiving oral sex. As predicted, males held more positive attitudes toward receiving oral sex than females. However, contrary to prediction, males also held more positive attitudes toward performing compared to females. In regard to sexuality, contrary to prediction, LGBT+ participants reported higher levels of nervousness around performance when engaging in oral sex compared to heterosexuals. Also, as predicted, LGBT+ participants reported feeling more pressure to perform oral sex compared to heterosexuals. This study highlights the diverse attitudes toward oral sex of college students and contributes to the advancement our understanding of their sexual attitudes and behaviors.

Roots of Understanding: Exploring Etymology's Impact on Language Acquisition

Olesia Kutuzova

Sponsor: Dr. Blaine Browne

Studying etymology, the history and origin of words, can significantly enhance cognitive skills when learning a foreign language. Understanding the roots, prefixes, and suffixes of words provides learners with a framework for deciphering new vocabulary and grasping complex linguistic concepts. By tracing the evolution of words back to their linguistic origins, learners gain insights into how languages are structured and interconnected, facilitating a deeper understanding of language mechanics. Moreover, exploring etymology cultivates analytical thinking and problem-solving abilities. Learners must make connections between words in different languages, identify patterns, and infer meanings based on linguistic clues. This mental exercise stimulates critical thinking and fosters a more flexible approach to language acquisition. Additionally, studying etymology fosters vocabulary retention. When learners understand the origins and meanings of words, they are more likely to remember them, as they are anchored in a broader context. This knowledge also enables learners to make educated guesses about the meanings of unfamiliar words, aiding comprehension and communication skills. Furthermore, delving into etymology can spark curiosity and cultural awareness. Learning about the historical, social, and cultural contexts behind words enriches the language-learning experience, fostering a deeper appreciation for different cultures and their languages. In conclusion, the study of etymology is invaluable for improving cognitive skills while learning a foreign language. It enhances analytical thinking, vocabulary retention, and cultural understanding, ultimately contributing to more effective language acquisition and communication.

Measuring Mindfulness in College Student Budgeting

Yoselyn J. Molina Melendez
Sponsor: Dr. Charles R. Talor

For many college students, going to college is the first time they must maintain their own independent budgets. An old method of maintaining budgets was introduced in Japan in the early 1900s known as Kakeibo, or mindful budgeting. A way to view mindfulness is to be honest with oneself, be disciplined, and be able to see a larger picture of our goals, costs, and income. When spending money, it takes time and commitment to monitor expenses and prioritize those expenses with our overall goals. The purpose of this project is to examine variables which college students use in their everyday lives in developing and maintaining their budgets. General questions involve: 1) How mindful are students in their budgeting, 2) Does budgeting effort or coherence change with year in school, and 3) Does budgeting coherence vary as a function of student background, such as gender, social class, ethnicity and race?

Variables under study for this project are:

- How aware are students in their budgeting? Where do their purchases go?
- What is their current monthly income from work, loans, assistance (for example parents).
- Do students separate expenses into categories. For example, eating out, groceries, rent, utilities, books, tuition, etc.
- Do students make a spreadsheet?
- Determine which expenses are fixed and which are not fixed.
- Be aware of what is a priority- Make a list with all the bills through the month with dates and amounts and have it somewhere that is visible every day.
- Always be aware of where the money is going- having a book record with all the money that is spent is helpful to keep track of the behavior.
- Be mindful in buying an item, always think about what it is needed for and if is affordable.
- Spending honest limits on wants- By having a limit, it prevents overspending, especially for over-budget items. They can save the allowances given to themselves until they reach the amount of the item they want.
- Do students always review or adjust the expenses at the beginning of the month? Are there changes to modify expenses as circumstances change?

Mindfulness Variables for Students with Disabilities adjusting to College

Britton D. Kirkland and Lude A. Jose

Sponsor: Dr. Charles R. Talor

The National Center for Education Statistics (2019) reported that in 2015-2016 that 19.2% of students in public higher education institutions had a disability. A student with a disability starting college must contend with the usual demands of higher education as well as their accessibility needs. In order to assess these demands a series of questions will be developed for with students with and without disabilities. Questions will include:

1. The following questions are concerned for when you started college:

- a. What were your major challenges for classwork?
- b. What were your major expectations for interaction with faculty?
- c. What kinds of support did you need for academics?
- d. What were your major expectations for interacting with fellow students?
- e. What were your expectations concerning working while in college?
- f. How did your parents support you when you began college?

2. The following questions are concerned for your current term in college:

- a. What are your major challenges for classwork?
- b. What are your major expectations for interaction with faculty?
- c. What kinds of support do you need for academics?
- d. What are your major expectations for interacting with fellow students?
- e. What are your expectations concerning working while in college?
- f. How do your parents support you now in college?

3. The following questions are for students with disabilities only:

- a. What accommodations did you have before starting college? Are these the same accommodations as you have now?
- b. Please compare your support services now with those before college.
- c. What are your interactions with peers are now compared to those before college?
- d. What were positive and negative issues with teachers before college and now with faculty at college?

We hope to examine the extent success in college reflects a balance of needs and demands by students. This balance may reflect a mindfulness of strategies which later become automatic.

Department of Sociology, Anthropology, and Criminal Justice

Anthropology

21st Century Cyborg

Tage Joseph France

Sponsor: Dr. Shelly Yankovskyy

You might think of science fiction when you hear “cyborg.” Beings with cybernetic upgrades and enhanced body parts that would make them stronger or faster than the average human. This seemed like a far-fetched idea not too long ago. Today, however, Biological Anthropologists would argue that cyborgs are not just found in science fiction movies and stories anymore but are already among us. Our understanding of technology and medical achievement continues to grow as well as our usage of technology. Cell phones, computers, GPS, and fitness devices are used more now in the 21st century to make us more aware of each other and our bodies. The cyborg of the future, however, will likely have enhancements that connect technology directly to the brain, or limbs connected directly to the nervous system. Using an anthropological approach, this research considers questions such as: Just how cyborg are we? How cyborg do we want or need to be? What are the implications of this for our society, both biologically and socially? In order to address these questions, survey research was conducted and analyzed to supplement the current literature on this topic.

Environmental Gentrification in America

Zachary Collis

Sponsors: Dr. Ellis S. Logan and Dr. Shelly Yankovskyy

Gentrification is a hot-button topic in the age of social media and online activism. Though the idea of typical gentrification is well-known and heavily discussed, the idea of environmental, or “green” gentrification is often unknown and overlooked. As the Global North begins to shift focus on becoming more environmentally conscious, green amenities and infrastructure such as bicycle lanes and green spaces are becoming increasingly popular in residential areas. Though on the surface these efforts seem beneficial, often these efforts are a façade, opening doorways for capitalistic greed and classism that displaces marginalized groups while catering to the elite. Utilizing the analysis of literature along with conducting a survey and an interview, this research hopes to gauge the public’s understanding and attitudes toward environmental gentrification as well as highlighting the experience of those personally affected.

Criminal Justice

Exploring the Influence of Age and Gender on Perceptions of Violent Video Games and Future Offending

Makayla Cowan
Sponsor: Dr. Brandon Atkins

Millions of children all over the world engage in playing video games. Many of these video games are considered violent. Previous research has looked at the effects of violent video games on children in terms of social learning, antisocial behavior, and psychopathology. The previous research also included some minor focuses on gender and age. Drawing from the prior research, I will examine how age and gender influence individuals' perceptions regarding the potential impact of violent video games on future offending. To collect data for this research, I asked three questions on a Qualtrics survey: 1) What is your gender? 2) What is your age? 3) Do you believe violent video games can lead to future offending? This survey was distributed on social media platforms such as Facebook and Instagram and was accessible to individuals who identified as 18 years old or older.

Exploring the Influence of Media Consumption and Age on Perception of Law Enforcement

Deanna C. Doyle
Sponsor: Dr. Brandon Atkins

People are increasingly diversifying their sources of news, relying on a wide array of platforms and outlets for information. Social media and television have started to be more widely used as the main source of information instead of newspapers. It is widely recognized that news sources often exhibit bias in their coverage and presentation of information, and more recently, it especially pertains to the police. With the increasing prevalence of social media platforms as sources of news and information, understanding how these platforms shape perceptions of law enforcement is crucial. My research examines how media consumption habits and age can impact individuals' perceptions of law enforcement. To collect data for this research, I created a survey through Qualtrics and distributed it on different social media platforms. I expect that the findings of this research will contribute to a deeper understanding of the relationship that media bias, demographic factors, and perceptions of law enforcement have.

Firearms, Politics, and Public Perspectives: How Race and Political Affiliation Shape Attitudes Towards Gun Control

Lola Grace Floyd
Sponsor: Dr. Brandon Atkins

Gun control laws and the right to bear arms often dominate conversations following tragic events in the United States. As American citizens, under the Constitution, we have the right to purchase and keep legal firearms for personal use and protection. However, this right is deemed essential for safety in many crime-ridden areas. The discourse surrounding this topic frequently turns political, sparking debates on various views and beliefs. Using survey experiment data and existing research, I aim to explore how an individual's political affiliation and race shape their attitudes toward gun control. To collect data for this research, I asked three questions on a Qualtrics survey: (1) Which political party do you most closely identify with? (2) What is your race or ethnic background? (3) Do you believe stricter gun control laws are needed to reduce gun violence? I expect that the findings of this research will contribute to a deeper understanding of demographic factors, political affiliation, and attitudes toward gun control.

Investigating White-Collar Crime: Examining the Impact of Demographics and Institutional Trust on Public Perceptions

Sabrina R. Maine
Sponsor: Dr. Brandon Atkins

White-collar crime constitutes a significant portion of financial crime in the United States, yet the rate of arrests for these offenses remains notably low. White-collar crime, characterized by non-violent, financially motivated offenses typically committed by individuals or organizations in positions of authority or trust, has significant implications for societal trust, economic stability, and regulatory enforcement. My research examines the perceptions of white-collar crime across different socio-economic backgrounds, shedding light on how individuals from diverse demographics perceive this type of criminal activity. Understanding these perceptions is crucial for developing effective strategies to raise awareness about white-collar crime and prevent its occurrence. By identifying the demographic groups most in need of information and awareness, we can better tailor educational efforts and advocate for stronger ethical regulations. To collect data for this research, I created a survey using Qualtrics and distributed it across multiple social media platforms. Through this research, I hope to develop a deeper understanding of the societal impact of white-collar crime and empower individuals to take proactive measures against it.

How does an Individual's Religion and Political Affiliation Influence Their Opinion Regarding Juvenile Intervention?

Harley S. Baldwin
Sponsor: Dr. Joshua B. Atkins

The connection between an individual's religious moral concerns and political affiliation has been used to inform the general public's opinion regarding juvenile rehabilitation's ability to reduce delinquent behavior. At-risk youth initiatives aligning with community and school-based programs in conjunction with positive family interactions have been shown to dissuade repeat and first-time offenders from continuous encounters with law enforcement officers. Previous research has illustrated that those under the age of 17 who have been processed in the criminal justice system are introduced to unique stressors accompanied by the reverse deterring effect. Through an original survey, I analyzed the correlation of the variables mentioned above to gain further insight into how one's social-political beliefs shape thought processes that may have ties to the long-term behavioral patterns of minors. My hypothesis is substantiated by empirical research—those with progressive values will be in support of intervention program performance and advocate for its additional funding, while conservatives, in contrast, are less likely to engage in nuanced conversations centering on the complex circumstances taken into account when discussing events leading to deviant acts.

Exploring the Complexity of Gun Rights: Examining Generational and Gender Influences

Averi L. Keller
Sponsor: Dr. Brandon Atkins

The debate surrounding gun rights and control in America remains a contentious issue, encompassing discussions on its regulation and societal implications. Previous research on the topic of gun rights has highlighted the complex nature of public opinion, revealing varying perspectives influenced by demographic factors such as age and gender. Using survey data, I aim to explore how attitudes toward gun rights differ between generations and genders. To collect data for this research, I created a survey using Qualtrics and asked respondents their gender, the generation to which they belong, and their stance on the issue of gun rights. The survey was distributed using various social media platforms. I expect that the findings of this research will contribute to a deeper understanding of how demographic factors shape attitudes toward gun control.

Religiosity and its Impact on Abortion Views

Tiaja Mobley

Sponsors: Dr. Ellis S. Logan and Dr. F. E. Knowles, Jr.

The purpose of this research is to determine if religion has any effect, positive or negative, on one's personal beliefs about abortions. Specifically, I will look at different religions, differences between religious and non-religious people, and the extent to which religion impacts people's attitudes towards abortions. Religion has played a major role in people's social views about various issues including abortions. Some people who identify as religious view abortion as a form of murder and against the moral views of the church. My project will utilize quantitative methods drawing on secondary data from the General Social Survey to test the impact of religiosity on views about abortion. Initial results show that people who identify highly with their religious status did tend to have more negative views on abortions. This research can aid in legislative issues regarding abortions and inform policies aimed at women's health.

Faith and Politics in Juvenile Justice: Examining the Influence of Religious Beliefs and Political Alignment on Attitudes towards Intervention

Harley S. Baldwin

Sponsor: Dr. Brandon Atkins

The relationship between an individual's religious beliefs and their political alignment has been used to shape public perception concerning juvenile rehabilitation and its efficacy in mitigating delinquent behavior. Previous research has demonstrated that individuals under the age of 17 who have undergone processing in the criminal justice system experience distinct stressors, often accompanied by a reverse deterrence effect. Using survey data, I examine how an individual's religion and political affiliation influence their opinion regarding juvenile intervention. To collect data for this research, I created a survey using Qualtrics and asked respondents about their political affiliation, religious affiliation, and opinion regarding juvenile justice intervention. I hypothesize that those with progressive values will support intervention programs, and those with conservative values, in contrast, are less likely to support intervention programs. I expect that the results of this study will enhance our comprehension of the impact of religion and political alignment on attitudes toward interventions for juveniles.

Sociology

Food Desert Epidemic: Albany, GA's Failure to Thrive

Demetria A. Wright
Sponsor: Dr. Philip Storey

Within the last six years, Albany, GA's food desert disparities obtain increased awareness through local news coverage, residential members, and City Commissioners. It initiated in October 2018, when Harvey's Supermarket closed in South Albany, GA due to damage from 2018's Hurricane Michael that devastated the city. Hundreds of residents were impacted and became ravaged from the unavailability of fresh produce, which lead to them traveling over 1 to 20 miles to the next nearest supermarket. City Commissioner Member Demetrius Young has a significant role in leading the advocacy to open a new supermarket in South Albany. With his advocacy, a Food 4 Less was opened in December 2021 to presumably end South Albany's food desert. However, the food desert in Albany is far from cessation. After I conducted my research for the food desert in South Albany, data revealed that the entire city is agonized by the lack of readily available fresh produce. How is that conceivable? With this research, I would like to understand what actions are taken to deal with this. Is it possible for Albany to eliminate its food desert? How could the city achieve that?

Social Media and Mental Health

Trinity Williams
Sponsor: Dr. Ellis S. Logan

This paper focuses on the ways which social media affects mental health. It will explore trends across the five most popular social media platforms: Facebook, Instagram, Snapchat, TikTok, and X, formerly known as Twitter. Since over half of the world's population has social media and spends an average of two and a half hours a day on these platforms, there are a range of ways in which they may impact people's wellbeing (Braghieri, Levy, and Makarin 2022). Every day, more and more people decide to join social media, meaning social media has a constantly expanding grip on society. For example, 95% of children aged 13-17 in America have social media with about a third stating that they use it "almost constantly," (USPHS, 2023). This paper includes an analysis of peer-reviewed literature as well as newly conducted research. The methods for this paper include two rounds of surveying as well as a couple of semi-structured in-depth interviews. These methods are used to determine both the positive and negative effects of social media on mental health and what socio-cultural factors may contribute to these wellbeing issues.

The Effect of Distance from College Campus on Student Grades for Traditional and Non-traditional Students

Victoria Emma Hilton

Sponsors: Dr. Ellis S. Logan and Dr. Anne Price

The study investigates how modality (traditional face to face versus non-traditional online students) and residential proximity to college campuses affects student academic performance. Survey data from a total of 59 Students of Lowndes and Glynn County, Georgia was examined using bivariate analysis, specifically cross-tabulations. Results show that traditional students and students that live closer to campus tend to achieve higher grades than non-traditional students and students who do not live near campus. The results also show that most students prefer traditional schooling because they feel they achieve higher grades and are more productive. Furthermore, students feel more that it is an academic advantage to live in close proximity to a campus where they can utilize academic resources. In conclusion, these findings suggest that higher education institutions should offer more face-to-face classes and work to increase access to supplies and materials.

The Connection Between Chronic Kidney Disease (CKD) and Food Insecurity: Southern US

Taelynn Walton

Sponsor: Dr. Ellis S. Logan

Globally, Chronic Kidney Disease (CKD) is an increasingly prominent health issue, impacting approximately 37 million Americans. CKD is characterized by five stages where the glomerular filtration rate progressively decreases due to damage. The three primary physiological functions of the kidney include waste removal, blood pressure regulation, and maintenance of pH levels. Adverse impacts include hypertension, uremia, etc. Those at an increased risk of developing CKD are minorities and individuals with pre-existing health conditions. Building upon the initial hypothesis from the 2023 Georgia Undergraduate Research Conference, it is hypothesized that the relationship between food insecurity and chronic kidney disease is influenced by complex social determinants, including systemic inequalities, limited healthcare access, and disparities in education and employment opportunities. Individuals facing food insecurity within marginalized communities may encounter barriers to healthcare, leading to delayed diagnosis and management of conditions contributing to CKD. Additionally, social stressors associated with food insecurity, such as stigma and social isolation, may exacerbate the risk of CKD. This continuation hypothesis seeks to explore the sociological dimensions of the connection between food insecurity and chronic kidney disease, aiming to identify structural factors that contribute to health disparities and inform targeted social interventions to improve kidney health outcomes.

Education, Political Views, and Perceptions of Immigrants of Color

Marie A. Philor

Sponsor: Dr. Anne Price

My research will examine how education level and political views influence people's perceptions and attitudes toward immigrants in the United States, specifically immigrants of color. By surveying the diverse population of Valdosta State University, my intentions are to utilize the results and to determine the intricate and complex dynamic between education and political views that may influence the public's opinion on immigrants of certain demographics. I hypothesize that people with higher education levels or people with the intent to gain higher education will have more positive attitudes and perceptions towards immigrants of color. I believe that they will be more empathetic and inclusive, due to cultural awareness developed through higher education coursework and programs. I also hypothesize that those who express more liberal political views will have a more positive perception of immigrants of color than those with a more conservative political view, because liberal policies overall tend to be less restrictive of immigration and conservative views advocate for stricter policies on immigration, in general. The findings of my research will hopefully provide a deeper understanding of the role these two variables have in shaping societal perspectives on immigration. It will also give insight into how it is necessary to advocate and work toward fostering inclusive, welcoming, and equitable societies for all immigrants, regardless of the country they may be from. This information could be very valuable to educators, policymakers, advocates, and others who have a passion to provide that type of society for their citizens, including immigrants. This topic is important because thousands of immigrants come to the US every single day, most coming from a country that predominantly has people of color. It is also important because understanding the impact of education and political affiliation on attitudes towards immigrants of color can positively inform policymakers on how to effectively reform policies related to immigration and integration.

Beyond Wins and Losses: The Effect of Gender Dynamics and Leadership on Collegiate Athletic Team Success

Mackenzie Branch
Sponsor: Dr. Ellis S. Logan

This research investigates the role of gender in leadership positions in Division II collegiate sports, specifically focusing on athletic directors and coaches. The objective of this study is to identify how women in leadership positions impact the relative “success” of the team. To examine this issue, I collected data from twenty-five unique collegiate sports programs within forty universities and three athletic conferences in the Southeastern United States. Using athletic program websites, I created variables indicating the gender of the athletic director and the gender dynamic between the team and the coach: female teams with female coaches, female teams with male coaches, male teams with male coaches, and male teams with female coaches. Data was analyzed using a series of regression models with two focal dependent variables, the conference winning percentage and post-season success. Initial results show that teams at universities with a female athletic director have greater postseason success when excluding football teams. Further, female teams with male coaches and female teams with female coaches have similar in-season winning percentages. This research illustrates the importance of female leadership in sports in terms of athletic success, but also suggests that female coaches may have impacts on female athletes in other ways.

The Social Effect of COVID-19 on Children Born After 2019

Asia Brown
Sponsor: Dr. Ellis S. Logan

The research is exploring the potential biological and social effects of COVID-19 on infants born during or after the pandemic. It seems that transmission from mother to child during pregnancy is rare, but nonetheless have social and biological impacts. The study aims to shed light on the potential social and health challenges these children face and to investigate any initial trends in potential long-term impacts on their social development and health status. Understanding these potential impacts of children born during the pandemic is a crucial step to better understand and safeguard the health of America’s youth.

The Effects of Participation and Finances on College Students Mental Health

Emari Moore

Sponsors: Dr. Ellis S. Logan and Dr. Anne Price

This research investigates the effect that co-curricular involvement on campus (specifically social organizations, sport teams, sororities, and fraternities) and financial issues have on Valdosta State University students' mental health. College students must find activities to be involved in and/or work so they can provide for themselves and enjoy the college experience. However, perhaps overcommitment can cause stress and lead to mental health issues. There are a number of studies that have indicated a steady rise in the percentage of college students with mental health issues over the last decade, with one study in particular finding that over 60% of college students in 2021 met the criteria for at least one mental health condition. Further, studies show that more than 70% of college students are concerned about finances. This study will identify the effect that these factors have on the students at Valdosta State University. My research will use a Qualtrics survey to examine the ways that participating in on-campus activities and financial issues affect college students' mental health. The goal of this project is to help college students not only on the Valdosta State University campus, but all college students in terms of guidance with mental health and financial stability.

Race and Gender's Effect on Attitudes towards Eating Disorders

Zakia Dixon

Sponsor: Dr. Ellis S. Logan

This project will investigate the relationship between race and gender and the role they play in attitudes towards eating disorders. An initial survey was conducted where the participants were asked their gender and race and their opinions towards the eating disorders: anorexia, bulimia, and binge eating. It was hypothesized that participants would be more empathetic towards anorexia and bulimia. The survey concluded that the participants generally viewed binge eating as a more individualistic issue, while anorexia and bulimia were seen as an issue brought upon by societal expectations. Given the evolution of societal expectations of body image, it is critical that the experiences of varying populations are examined. The new research aims to focus more on addressing the contexts that shape people's perception around body image and abnormal eating behaviors. The study also aims to shed light on how cultural and societal expectations cause eating disorders to manifest in different ways.

How does Age and Family Values affect Students' Views on Marriage?

Victoria Ahmadu

Sponsors: Dr. Ellis S. Logan and Dr. Anne Price

An important topic in family sociology is the way age, gender, and a parent/guardian's marital status affect a student's views on the desirability of marriage. Research on this topic can give insight into how a person's parental structure during their childhood influences their own definition of unity or eternal bonding between two individuals, and the importance of marriage for legitimizing this union. While previous research has explored these aspects of marriage and family for older individuals, this paper will focus on perceptions among contemporary college students and young adults. This study will test how age, and a student's parent/guardian's marital status, affects students' view on the importance of marriage. I hypothesize that younger individuals are less likely to want to get married in the future. I also hypothesize that college age men are less likely to want to get married than college age women. Finally, I also expect that children whose parents were married during their childhood will place greater importance on marriage. The data and the findings that are discussed in this paper give the perspective of a college student's belief and desires regarding marriage. Theories illustrate that children are better off when their parents are married, but with changing societal domestic relationships, I am curious to see if marriage is still of key importance for the young adults of the current generation.

Subtitles and Reading Fluency

Keimani Wilson

Sponsors: Dr. Ellis S. Logan and Dr. Anne Price

Subtitles are intended and used for various reasons: the video is too dark, the audio is too muddled, or the language is not one that the audience speaks. During my literature review, I also found that research has documented how subtitles help students that are learning English as a second language. Of course, subtitles can also be used in the classroom to help the more visual learners comprehend video content. I hypothesized that younger people used subtitles more often when watching a video. Previous research has shown me that the use of subtitles has increased with the growth of video medium, such as TV, movies, and YouTube videos to name a few examples. Subtitles also have some effect on reading fluency and comprehension in younger people. In my research, I examine how age and reading fluency shape use of subtitles. I utilize data gathered from a Qualtrics survey provided to faculty and students at Valdosta State University to examine the connection between a person's use of subtitles and their reading fluency and comprehension. Educators at all levels can use this information and implement it into their learning strategies creating a more accommodating learning experience. Initial results show that age is a predictor of subtitle usage with younger people using subtitles more often.

Black Pill Culture and Toxic Masculinity

Kianna Moore

Sponsor: Dr. Ellis S. Logan and Mx. Rob Taylor

This research explores the impact of social media on the increase of toxic masculinity, while focusing on the Black pill community's influence, looking closely at incels and the younger generations. This research examines how exposure to black pill content can shape the younger generations views on toxic masculinity. Examining Alpha Male content led by figures like Andrew Tate and platforms like Fresh and Fit podcast, the essay delves into the potential consequences for societal progression and gender equality. The influence that social media has on the younger generation's personality has been a rising issue. This essay focuses on molding of political and social beliefs through exposure to specific content. The essay concludes with observing the implications of this trend for the future. While also expressing the concern about potential the regression of societal values. While also getting first-hand experience of younger male and how social media influences them personal.

Exploring Relationships among Daily Screen Time Total, Social Media Applications Used, and Individual Self-rated Mental Health

Caitlin Hultquist

Sponsor: Dr. Anne Price

Is an individual's mental health affected by overall screen time and by time spent on social media? Currently, the mental health of college students is an important and concerning topic. There are many factors that may affect an individual's own subjective mental health status. I hypothesize that greater overall daily screen time results in poorer self-rated mental health. For screen time, I will be asking what the individual's average daily screen time usage is in hours. I also hypothesize that mental health may vary based on the type of social media app the individual spends the most time on. For social media, I will be asking what their most used social media app is. I am curious to see how total screen time plays a role in affecting mental health. I am also interested to see what apps college students will use the most frequently on a daily basis and explore how different apps may affect mental health.

Political Science

The Bully Pulpit and Theodore Roosevelt: The Effectiveness of Spoken Word, and Public Policymaking

Austin Peterson

Sponsor: Dr. Marc G. Pufong

Purpose: The purpose of this paper is to analyze the effectiveness of “bully pulpit” as a setting that drives executive policies by examining the actual policies advocated by President Theodore Roosevelt during his term of office 1901-1908.

Questions of Study: The question for assessment is not whether the president can use bully pulpit to bring out the best in civic life, BUT rather one of effective use. As an opportunity for an incumbent president to exhort, instruct, or inspire, the effective use of bully pulpit is content driven. The paper therefore assesses the effectiveness of the content that drove the pulpit used by President Roosevelt.

Data and Method: The State of the Union addresses from 1901-1908 are the bully pulpit representing the source of our data for this study. For data coding purposes, “spoken and written words” are used as a formal premise of data-assessments. Of interest for our judgment are policy proposals delivered in the form of (a) actual policy initiative in statement spoken; (b) statement framing ideas into policy sent to Congress. The use of Content Analysis as a methodology allows the quantification and assessment of the policy proposals made as they move from the pulpit and to Congress; from Congress to executive for signing into law, and onto bureaucratic implementation by Administrative Agencies. Actual policies analyzed and central to the analysis revolved around Roosevelt's "Square Deal," the core goals which were put forth by his administration notably: conservation of natural resources, consumer protections, and control of corporations.

Findings: This content analysis reveal that Roosevelt effectively shifted strategies in the use of Bully Pulpit. In his context, he either acted alone by making extensive use of “executive orders” such as in his Environmental policy area or had Congress to make law suspending the Child Labor Acts etc..

Summary: Content Analysis is a useful measure of the effectiveness of what so far been an abstract mantle of political symbolism. It allows for an empirical demonstration that Bully Pulpit is much more than a stage, it is formidable policy content loaded stage. For President Roosevelt, it was a policy nest that made him an effective President.

Fox News Viewership across the 50 States

Margaret Ellison Smith
Sponsor: Dr. James LaPlant

The purpose of this quantitative study is to investigate the predictors of Fox News viewership across the 50 states. This study evaluates the factors that may contribute to the viewership rates across the US. The seven factors that are used in the study to examine the viewership are region, percentage of the population that is over 65, percentage of the population with a college education, population density, per capita household income, percentage of the population that is white, and the 2020 Trump vote. The impact of these variables on the dependent variable, the percentage of Fox News viewership per state, is determined through a correlation analysis, scatterplots, boxplot, and multivariate regression analysis. Two of the independent variables proved to be statistically significant. The percentage of the population that is white and the 2020 Trump vote the two variables that proved to be statistically significant. Region, percentage of the population that is over 65, percentage of the population with a college education, population density, and per capita household income did not prove to be statistically significant. The percentage of the population that is white proved to be statistically significant at the $p < .001$ level in the regression analysis. The Trump vote proved to be statistically significant at the $p < .05$ level and the white population proved to be significant at the $p < .01$ level in the multivariate regression analysis. Studying the different factors that affect Fox News viewership help to explain many key ideas like party affiliation and opinions on political issues.

Egypt, the New constitution, Rights and Freedom: More or Less?

Kimirria Lawrence
Sponsor: Dr. Marc G. Pufong

In this report on Egypt, we present the situation in all matters concerning constitutional rights, and notably the civil rights and liberties in Egypt under the pre and especially the post Arab Spring's Constitution of 2014. We question whether the people of Egypt are better off under the new than the old Constitution. Quite simply, do Constitution or Government guarantee individual liberties? This report uses a list of six sources to cross-examine these three aspects of governance in Egypt spanning from 1970 until present day with contrast on the pre-Arab Spring Constitution (1971- 2013) and Post Arab Spring Constitution (2014-2019). We also examine the role of Court in Egypt in rendering Justice. From the words of the Egyptian Constitution, the constitutional framework and all of the fundamental guarantees are outlined. And through the civil and human rights records, an investigation of the executive government's use of power is appraised relative to the people liberties noted. Using data points 10 year apart we note point of actual abuses and transgressions of Rule of law, impunity and general denial of civil liberties to conclude whether Egyptian are better off under the new or old Constitution. While there are some changes and certain notable right inscribe in the new that the 1971 Constitution, the data reveal no meaningful charges. That is, actual enjoyment of the rights under the new are best doubtful. We conclude that that a government or those who accede to power continue to cast doubt over the viability of governmental institutions to follow the rule of law and justice.

2022 GOP Primaries in Six Key States: Key Predictors of Successful Outcomes

William Ellis Davis
Sponsor: Dr. James LaPlant

The purpose of this quantitative study is to examine the key predictors of the winners in the 2022 Republican primaries in six key battleground states. This study evaluated the primary races in the battleground states of AZ, GA, MI, NV, PA, & WI. The study analyzed seven independent variables: age, gender, race, region, incumbency, whether they were endorsed by Trump, and whether they denied the election results of 2020. The impact of these variables on the dependent variable, whether they won their primary or not, is determined through a correlation analysis, scatterplots, boxplot, and multivariate regression analysis. Two of the eight variables proved significant while the others were insignificant. The variables of incumbency and being Trump endorsed were found to be significant while age, gender, race, region, and being an election denier were not. Contrary to the hypothesis in this study, Trump's endorsement had a negative relationship with the likelihood of winning. Region was insignificant. The bivariate and multivariate analysis showed that incumbency had a positive and statistically significant impact on the likelihood of winning. Intriguingly, Trump's endorsement was a significant negative factor in the 2022 primary election campaigns.

Opioid Deaths in the United States

Noah Phillips
Sponsor: Dr. James LaPlant

This study explores predictors of opioid death rates in the U.S. across 50 states from 2019-2021, highlighting the impact of the COVID-19 pandemic. Analyzing factors such as population density, education levels, unemployment, poverty, racial demographics, and state political control, the research utilizes data from the CDC, U.S. Census Bureau, and other agencies to identify correlations with opioid fatalities. Findings reveal a strong positive correlation between unemployment rates and opioid deaths, suggesting economic conditions significantly influence drug-related fatalities. Surprisingly, higher education correlates with increased opioid deaths in 2021, challenging the protective assumption of educational attainment. Moreover, the study observes a negative correlation between population density and opioid death rate changes during the pandemic, inferring that urban areas may be better managing the crisis. The research indicates that Republican-controlled states show higher opioid death rates, pointing to governance style as a critical factor. The study advocates for a holistic approach to the opioid crisis, considering social, economic, and political dimensions to formulate effective public health strategies. It calls for further investigation into mental health services, treatment program quality, and the political and pharmaceutical industry's role in addressing the epidemic.

Covid 19 and Mental Health in the 50 States: Key Predictors of the Suicide before and at the Wake of the Pandemic

Kaylor Stone
Sponsor: Dr. James LaPlant

The purpose of this quantitative study is to investigate the key factors contributing to the suicide rate before (2019) and during the wake of the COVID-19 pandemic (2021). This study also explored the key predictors of the change in the suicide rate from 2019 to 2021. This study analyzed nine independent variables: the percentage of the population with a bachelor's degree, the percentage of the population aged 25 to 64, the percentage in Trump votes by state in 2020, the amount of state mental health agency expenditures per capita, the percentage of the population unemployed at the height of the pandemic, the crime rate per 100,000 people by state, the level of gun restrictions by state, population density, and region. This study is composed of three dependent variables: the suicide rate per 100,000 people in 2019 (pre-pandemic), the suicide rate per 100,000 people in 2021 (post-pandemic), and the change rate before (2019) and after (2021) the pandemic. The impact of the independent variables on the dependent variables is determined through correlation analysis, scatterplots, box plots, bivariate regression analysis, and multivariate regression analysis. Gun restrictions by state was the only statistically significant predictor of the change in suicide rates from 2019 to 2021, and population density was found to be a statistically significant predictor of suicide rates in 2019 and 2021. The percentage of the vote for Trump by state was found to be significant in only two dependent variables: the suicide rate per 100,000 people in 2019 (pre-pandemic) and the suicide rate per 100,000 people in 2021 (post-pandemic). Contrary to the hypothesized relationship, state mental health spending per capita is positively associated with the suicide rate in 2019 and 2021. In relation to region, the west demonstrated the highest suicide rates with the lowest in the northeast.

A Tangled Web: The Murdaugh Family and the Southern Political Network

Ellis Davis

Sponsor: Dr. James LaPlant

The purpose of this paper is to explore the more than one-hundred-year impact of the relationships and networking of the Murdaugh family within the Southern political realm particularly in the state of South Carolina. The legal dynasty started in 1910 by Randolph Murdaugh and continued for the next three generations having a larger-than-life presence in the local, state, and national judicial system and exerted intentional and unintentional influence over the citizens of Hampton County and surrounding areas. The family was a dual presence in both public and private legal matters, serving as solicitors for over one hundred years, the longest running familial control of justice in history while also owning the largest private law firm in the area. The firm which came to be known as Peters, Murdaugh, Parker, Eltzroth, & Detrick (PMPED) established its presence nationally as a forum for venue shopping to ensure favorable legal outcomes for clients. Everything was legal due to the exploitation of a loophole in the law and the firm exerted their power to take full advantage. The name Murdaugh was synonymous with privilege and power and to many the name represented the law of the land. It was this presence and persona that led many to doubt that if in question, no Murdaugh would ever be accused or if accused would never be acquitted in the courtroom that bore the portraits of the two generations that had passed on. Anyone facing prosecution was indicted by a Murdaugh, stared down by the portraits of Murdaugh men, and ironically possibly represented by an attorney from the Murdaugh firm. Not until 2019 was a Murdaugh ever on the other side of the law. The great-great grandson of the patriarch was charged with boating under the influence, charges that resulted in the death of a passenger. This was the domino that started a series of events that would bring an end to the reign of the Murdaugh family.

Pakistan: Islamization Constitution, Citizenship Rights, and the Rule of Law Allure

Sabane Maiga

Sponsor: Dr. Marc G. Pufong

This paper examines Pakistan's Constitution and human rights with particular focus on assessing whether the government of Pakistan today adheres to the charter of fundamental rights provided in Pakistan constitution and the international treaty it is signatory. With the general (hypothesis) that governments allure or quality (to include respect to the rule of law) are generally attributable and traceable to some distinctive constitutional attributes of the country and people, we assume that Pakistan is no exception. This paper examines Pakistan government's failure or success in that light.

Methodology: A quantitative approach is adopted using multiple years of data sources on human rights whereby it compares the same reports over 6 years (2016-2023). It assesses whether over the years (a) the government demonstrated support for human rights and rule of law, (b) the government demonstrated support for fundamental rights of citizens and (c) whether the government demonstrated respect for or lack of respect for civil rights and liberties in the country has improved, declined, or gotten worse. Data sources from 2016 confirmed that Pakistan demonstrate the same Human Rights problems which in 2022 remain prevalent and, in some cases, gotten worse. There is evidence that the overall adherence/respect for rights has declined. There is also specific evidence to the conclusion that human rights and civil liberties have declined in Pakistan, all of which beg the question why? This paper surmises that the observed decline in patterns of human rights, freedoms and rule of law will continue to affect the Pakistan constitutional and political order for years to come as long as the rift in contested religious and legal order continues.

Modern QATAR Theocracy, Changing Ideas of Citizenship and Rule of Law

Victoria E. Tanner
Sponsor: Dr. Marc G. Pufong

This paper focuses on Qatar Government and society. The modern Qatari government is product of a 2005 Constitution which established Qatar as a constitutional hereditary monarchy and therefore a theocratic government. This paper examines Qatar's Constitution, with particular focus on assessing whether the government's modern ambition allow for shifting theocratic values towards more or less openness and why? The paper therefore assesses whether modern Qatar government (a) has demonstrated support for human rights and rule of law, (b) demonstrated support for fundamental rights of citizens and (c) demonstrated respect for or lack of respect for civil rights and liberties of its citizens in a country that embraces theocratic values. In a theocracy, laws for the most part, are based on the spiritual values ascribed to the government. Part of the assessment in this paper focuses on changing ideas of citizenship under the fast-growing Qatari government's program of modern traditionalism as those conflicts with equally modern notion of rights and the rule of law. The Qatari leadership's efforts to improve the material lives of its citizens, also reinforce divisions between Qatari nationals and nonnationals. Over the last 10 years the scale of the government ambition has required that Qatar rebuild its infrastructure in rapid succession, while also undertaking a series of modernized megaprojects related to education, sports, transportation, medicine, business, media, arts, and more costing billions of dollars. To achieve this, Qatar has imported millions of laborers, rendering Qatari nationals an ever-shrinking proportion of their country's population. Qatar's growing foreign workforce thus raises concerns for citizenship in modern Qatar. For this study, evidence gathered from data sources allow us to question and test whether modern Qatar ambitions that embraces a more circular views and lifestyles translate to more or rather less respect for rule of law and human rights than otherwise could have been the case in traditional theocratic society.

College of Science and Mathematics

Department of Biology

Genome Sequencing of the Invasive Mussel *Mytella charruana*

Jacob C. Adams

Sponsor: Dr. Cristina Calestani

Mytella charruana is an invasive marine mussel found along the southeastern US coastline. Beside threatening the survival of native species, *M. charruana* is also compromising the aquaculture of oysters and clogging power plant water intakes. To date, the genome of *M. charruana* has not been sequenced. In this study, we first optimized the DNA extraction procedure to obtain DNA of high integrity and purity, suitable for sequencing using the Oxford Nanopore Technologies system. DNA was extracted with the DNeasy Blood & Tissue Kit (Qiagen) and a modified protocol with the goal of minimizing DNA shearing. We compared the two methods starting from gills, foot, and mantle tissue. The genomic DNA size and integrity was analyzed with the Agilent Technologies TapeStation. The best results were obtained using the modified method, starting from mantle or foot tissue. To date we sequenced 1.128 Gb of the genome (approximately 1X genome coverage). The sequencing of *M. charruana*'s genome will facilitate the use of eDNA and the development of molecular markers to track this invasive mussel. It will also provide the groundwork for gene expression studies related to the survival and reproduction of this invasive mussel in their introduced environment.

Seasonal Population and Ongoing Morphometric Analyses of Wild Dwarf Seahorses (*Hippocampus zosterae*)

Diah Brown and Paige Bland
Sponsor: Dr. Emily Rose

Seahorses are known to be vulnerable species due to threats, such as habitat loss or over-harvesting, that can lead to a rapid decline in wild populations. The primary objectives of this study were to document seasonal population dynamics and analyze morphological variation in the dwarf seahorse, *Hippocampus zosterae*. Fish were collected from Tampa Bay, FL, photographed, and released back into the wild over an entire year from August 2022 through July 2023. Seasonal patterns in seahorse abundances, with the largest population numbers reported in October 2022 during the peak breeding season, are supported by the increase in juveniles observed in November 2022. Photos of the fish were analyzed using the program ImageJ with seahorses measured (mm) based on snout length, head length, trunk length, tail length, body width, and total body length. Preliminary results concluded that trunk length, tail length, and body width were sexually dimorphic, which could be attributed to the unique reproductive roles due to male pregnancy. Preliminary results indicate a seasonal difference in cirri presence, which are theorized to aid in camouflaging and potential mating preferences. These results aid in conservation monitoring, identifying habitat changes in the seagrass beds, and detecting wild seahorse mating patterns and preferences.

Testing the Acoustic Adaptation Hypothesis: Anuran Signal Transmission at Different Heights

Jewell Johnson
Sponsor: Dr. John Phillips

The acoustic adaptation hypothesis was introduced in 1975 by ornithologist Eugene S. Morton. This hypothesis suggests that in order to overcome environmental constraints, signals are selected for characteristics that improve transmission in the transmitter's native environment. Frogs and toads (Anurans) are great candidates to test this hypothesis since individuals have lower dispersal and tend to inhabit similar environments to where the species evolved. This is helpful since the calls they produce are more likely to be adapted for that area. Since their niches are limited, we have reason to believe that if the acoustic adaptation applies to anurans, their calls should be optimal for their habitats. In our study, we are conducting an experiment to test aural aspects of anuran calls at different heights within an environment.

X-Ray Imaging of Siliques and Seeds from *Arabidopsis thaliana*

Nashay E. Brooks

Sponsor: Dr. Ted Uyeno and Dr. Ansul Lokdarshi

Arabidopsis thaliana is a classic plant model organism for understanding the genetic determinants of seed size; however, the small size of its seeds makes measurements difficult. Bulk seed weights are often used as an indicator of average seed size, but details of individual seed is obscured. Analysis of seed images is possible, but issues arise from variations in seed pigmentation and shadowing making analysis laborious. The traditional way of analyzing seed count in *Arabidopsis* silique (seed pod) involves a tedious histological procedure that usually takes more than 2 days before visualization of the seeds. To investigate alternative methods that are non-invasive, require least sample processing and shorter time for obtaining useful data, we decided to test the use of X-ray imaging of *Arabidopsis* siliques at different stages of their growth. Currently, we are collecting images of the *Arabidopsis* siliques and seeds under standard growth conditions. Image analysis for seed count and size will be performed using an open source program, Image J, which will be in conjunction with appropriate statistical tests.

Bringing Field Work into the Classroom with a Controlled Environment Box for Outreach and Training (CEBOT): An Experiential Learning Study!

Morgan E. Wynn

Sponsor: Dr. Ansul Lokdarshi

Healthy plants have the power to help end hunger, protect the environment, and boost economic development. Conventional methods employed to study plant health include fieldwork or the use of large green houses/growth chambers, which often suffer from high maintenance costs and safety concerns. To overcome these challenges while offering all types of learners with an in-house experiential learning experience, we present the use of a Controlled Environment Box for Outreach and Training (CEBOT). We investigated the effect of one of the most widely used herbicides, methyl viologen, on a major local crop, *Arachis hypogea* (Peanut). Timed course imaging using a Raspberry Pi attached camera combined with microscopy and biochemical analysis suggests significant stress to the herbicide treated plants versus mock. Our successful use of the CEBOT device to study plant health in a classroom setting provides a unique opportunity to anyone at VSU interested in careers related to plant ecophysiology and digital phenotyping. Our future goals include: 1. Incorporation of the CEBOT device in other courses, such as cell biology and biotechnology; 2. Incorporate machine learning and artificial intelligence with CEBOT-gathered data for predicting environmental conditions that can promote plant health and productivity.

Coffee Conservation: Using Passive Acoustic Recordings to Identify Singing Birds on Coffee Farms in Brazil

Marianoelle Rivera, Chayla Lopez and Ryley Kleive
Sponsor: Dr. Erin Grabarczyk

In Brazil, coffee is a major agricultural commodity. And conservation efforts are in place to improve habitats around coffee farms to support diverse animal communities. On farms, birds play an important role in pollination and pest control. We used passive acoustic recording units to record singing birds at two farm sites in Brazil. One located in the Brazilian Cerrado region and a second located near the city of Viçosa. Recordings were made from February until September, 2023. In the lab, we are currently using the Merlin Bird ID app to make an initial identification of singing birds by species. After identification with Merlin, we confirm the bird calls and life history traits with the Birds of the World atlas. Combined, we are generating a list of singing birds that were recorded on both farms. The next steps for this project will be to continue to record singing birds on conservation coffee farms as well as to generate machine learning techniques to automate signal detection.

Comparison of Juvenile Seahorse Measurement Methodologies

E. Lanier Baker
Sponsor: Dr. Emily Rose

Wild populations of seahorses (*Hippocampus spp.*) have shown a progressive decline due to natural causes and human interaction. By understanding common trends in seahorse growth, better conservation efforts can be applied to seahorse populations in the wild. This study aims to compare two different methodologies of juvenile seahorse length measurements on dwarf seahorses (*H. zosterae*) to determine the ideal procedure for future endeavors. Initially, 100-day-old seahorses were measured using a protocol based on *H. erectus* species, resulting in whole length ranging from 20.137 to 42.613 mm, averaging 30.174 ± 0.411 mm (n=112). This measurement is comprised of two body segments: bottom of the snout to the crown and the crown to the tip of the tail. An alternate methodology based on several *Hippocampus* studies is now being used to measure the same juveniles. This protocol will be used in measurements of juvenile seahorses from day 0 to day 100 to observe growth rates. This alternate methodology is being utilized to survey 100-day-old lab reared seahorses to compare with wild caught *H. zosterae* juveniles from previous publications using the same methodology. The insight into this life history trait of seahorses will deepen the understanding of wild seahorse populations to increase conservation methods and efforts.

Facial Recognition Techniques to Identify Individual Gulf pipefish in Tampa Bay, FL

Brooke H. McKay
Sponsor: Dr. Emily Rose

Gulf pipefish, *Syngnathus scovelli*, is an excellent flagship species for their seagrass habitat. We tested if mark resight techniques could be coupled with individual fish identification to strengthen population estimate models. During August 2022, pipefish were collected and photographed on six occasions (4.8-day average interval) from two sites in Tampa Bay, FL before being released in the center of their respective sites. Pipefish were marked with visible implant elastomer tags on alternating collection events for a mark resight population estimation and movement pattern study. The pictures taken were then going to be run through the facial recognition programs I3S and Wild-ID to track recaptures, but the programs failed to identify individuals via facial and body markings. Although computer software could not recognize individuals, we could successfully visually match fish due to individual heterogeneity in their markings. This suggests that Gulf pipefish have unique individual body patterns which can be used for noninvasive mark recapture techniques. Although this is useful knowledge, further development of animal facial recognition computer software would be needed before implementing this in the field. By using marking techniques, we can monitor their movement throughout their habitat which will lead to a greater understanding of this species.

Using AlphaFold, an Artificial Intelligence Protein Structure Prediction Program, for Developing GCN2 Structure

Kiersten S. Ley and Teresa K. Akuoko
Sponsor: Dr. Ansul Lokdarshi

Phosphorylation of the alpha subunit of translation initiation factor (eIF)2 is one of the most widely studied translational control programs across all eukaryotes. In humans, up to four structurally related serine-threonine kinases phosphorylate eIF2alpha at a conserved N-terminal serine residue in response to distinct physiological stresses. Interestingly, all plants have only one eIF2alpha kinase, General Control of Nonderepressible (GCN)2, which phosphorylates eIF2alpha in response to various xenobiotic, biotic, and abiotic stresses. Previous work by Lokdarshi (2020) provided new insights into the rapid regulation of *Arabidopsis thaliana* AtGCN2 protein via reactive oxygen species. To better understand the AtGCN2 activation mechanisms, we performed protein sequence alignment and structure prediction using the artificial intelligence program AlphaFold. The AtGCN2 (1265 amino acid) protein consists of three highly conserved domains that seem to structurally resemble the GCN2 domains reported in other eukaryotes. In addition, there is conservation of amino acid residues at key regulatory sites within these domains, suggesting some level of similar regulation/activation. Interestingly, the absence of additional regulatory regions (such as the linker and a c-terminal domain) indicates activation/regulatory programs evolving to respond to plant-specific signals.

The Effects of Category 4 Hurricane Ian on the Gulf pipefish, *Syngnathus scovelli*

**Kenneth J. Armstrong, Aldo Madrigal Oliver and
Megan N. Sims
Sponsor: Dr. Emily Rose**

Hurricanes are strong tropical storms that have detrimental effects to coastal seagrass beds and their inhabitants. The Gulf pipefish, *Syngnathus scovelli*, is a great flagship species to monitor these impacts. This study aims to assess the effects of Category 4 Hurricane Ian on *S. scovelli* where the negative storm surge drained Tampa Bay seagrass beds for 29 hours on September 28, 2022. Pipefish were collected on September 16th and October 7th, 2022 from two seagrass sites in Tampa Bay using modified push nets. On September 16th, we collected 104 pipefish (33 males, 36 females) from North Site and 172 pipefish (72 males, 44 females) from South Site. On October 7th, we collected 130 pipefish (54 males, 38 females) from North Site and 112 pipefish (46 males, 27 females) from South Site. After collection, adult pipefish were sexed, photographed, and released back at their site. Using Image J software, the adult pipefish pictures were measured for standard length and width. Overall, females were significantly larger than males, but impacts from Hurricane Ian were site specific. Understanding how the reverse storm surge impacted *S. scovelli* and their seagrass ecosystem will provide insight into how the population's dynamics are affected by hurricanes.

Gulf pipefish Sexual Dimorphism and Seasonal Abundance in Tampa Bay, FL

**Aldo Madrigal Olivarez, Kenneth J. Armstrong and
Megan N. Sims
Sponsor: Dr. Emily Rose**

Population traits like sexual dimorphism and seasonal abundance in Gulf pipefish, *Syngnathus scovelli*, are location-dependent, but previous studies have recorded these traits in Tampa Bay. Males are generally shorter and narrower when compared to female pipefish. Based on this information, we hypothesize that male and female morphometrics and abundance will change monthly depending on water temperature. During August 2022 to July 2023, pipefish were collected, photographed, and released monthly from two sites within a Tampa Bay seagrass bed. We then used ImageJ to measure the standard length and width from the 2,740 pipefish. Using these measurements, we compared how population morphometrics and demographics changed monthly. When conducting several tests in past analytics, we determined that females are bigger than males, but this study focuses on finding what months specifically had different demographics. Preliminary data suggests females are significantly larger than males, and abundances are seasonally dependent. Understanding this information will enable us to get insight into how pipefish utilize their environment and how we can protect their seagrass ecosystem from coastal development, wastewater runoff, and agriculture.

Schooling the Bettas: Conditioning a Response in *Betta Splendens* Using Reinforcement

**Michael K. Clarke
Sponsor: Dr. Emily Rose**

Betta fish (*Betta splendens*) or Siamese fighting fish are freshwater fish native to Southeast Asia, found in Thailand, Vietnam, Myanmar, Laos, Cambodia, Indonesia, and Malaysia. Being one of the first domesticated fish species, around 1,000 years ago, bettas were used in sparring competitions, similar to cockfighting, for entertainment and gambling in Thailand because of their naturally aggressive and territorial behavior. Through selective breeding, betta fish were able to attain various assortments of colors and many tail and fin types seen today – these valuable characteristics have led betta fish to be one of the most common household fish. Betta fish exhibit sexual dimorphism in body size and color, with males being larger with longer fins and bright uniform coloration while females are dull and patterned with shorter fins. Ongoing studies in the lab will examine whether betta fish display a stimulus/reinforcement preference when conditioned towards a behavior. Tests will be done using 16 pairs of male and female betta fish to assess differences in responses of the sexes. Understanding the stimulus preference of betta fish is beneficial as betta fish are predominantly household fish and supplying them adequate enrichment will aid in their health, mood, and quality of life as pets.

Development of Molecular and Biochemical Workflow for the Characterization of *Arabidopsis thaliana* Transgenic Plants

**Pearce A. Persaud and Connor C. Bland
Sponsor: Dr. Ansul Lokdarshi**

The development of *Arabidopsis thaliana* transgenic plants necessitates several steps to introduce foreign genetic material (transgene) into the plant's genome, followed by characterization and functional analysis. Our research goal in Dr. Lokdarshi's lab for the Spring 2024 semester is to establish a clear workflow for analyzing the stable integration and expression of the transgene and to assess their phenotypic and molecular characteristics. The work presented here employs a classic molecular biology tool, polymerase chain reaction (PCR), and a standard protein biochemistry technique, immunoblotting, to characterize the transgenic plants. PCR genotyping is utilized to identify specific genetic markers within the *Arabidopsis* genome, allowing for the determination of genetic variation and the presence of target genes related to various physiological traits. Whereas immunoblotting is employed to analyze protein expression patterns within *Arabidopsis* plants, providing insights into the regulation of key molecular pathways and the dynamic interplay between genetic information and protein function. We show that our PCR-based genotyping method (DNA extraction, PCR amplification, electrophoresis, PCR product detection, and data analysis) works successfully with the transgenic *Arabidopsis* plants. We are currently optimizing our immunoblotting procedure for the characterization of the transgenic plants at the protein level.

Evaluation of Slimy Salamander Ecology (*Plethodon glutinosus*) in South Georgia

Clayton Gall

Sponsor: Dr. John Phillips

As the biology field continues to advance, so should our understanding of the living organisms within our local ecosystems. To further help in understanding organisms we have deployed a plotting system of coverboards in several natural areas in Lowndes County proximate to VSU. We have developed simple plots to survey salamanders and other fauna in the leaf litter of local forest ecosystems, allowing us to quantify community and population level variation. We have set up various grids in nearby forest areas comprised of 1ft x 1ft pieces of wood placed on the forest floor. Throughout this study, we will be periodically surveying and documenting the inhabitants underneath our coverboards in each plot, with a specific focus on marking and releasing the salamanders to accurately monitor populations over time. Our experimental setup is important as amphibians such as salamanders can be a bit picky about where they hangout and are very sensitive to environmental conditions. Giving the boards time to go through a few cycles and even develop fungi and bacteria. This study may allow us to record other amphibian species as well. Through the completion of this study, we will gain a better understanding of the faunal community in South Georgia hardwood forests and develop hypotheses as to the causes and consequences of community composition.

The Geographic Distribution and *Dirofilaria immitis* Infection Rates in Members of the *Anopheles crucians* s.l. Species Complex in Lowndes County, GA

Akshil Patel, Capri N. Persuad, Julia R. Higdon,

Sandra S. Arellano and Zoe A. Barrett

Sponsor: Dr. Eric W. Chambers

Dirofilaria immitis is a parasitic roundworm commonly known to cause heartworm disease in domestic dogs and cats. Mosquitoes are the obligate intermediate hosts. This study explores the role that the mosquito species complex, *Anopheles crucians* s. l. plays in the transmission of *D. immitis*. This complex consists of six mosquito species that are not readily identifiable by keys at the adult stage. Using mosquitoes collected in 2014 this study sought to answer two questions: (1) What members of the *An. crucians* species complex were present in Lowndes County, GA and (2) what was the prevalence of *D. immitis* infection within members of the *An. crucians* species complex. We used multi-plex PCR of the ITS2 rDNA gene to determine which members of the species complex were present and we used PCR amplification of the *D. immitis* ITS2-16S gene to determine prevalence of mosquito infection. We identified three distinct species of *An. crucians* s.l. in Lowndes County; species A, species C, and species D and we determined the minimum rate of *D. immitis* infection within the *An. crucians* s.l. mosquitoes was 4.7%. Based on this work we believe that further investigation into *D. immitis* transmission by *An. crucians* s.l. is warranted.

The Evolution of Diverse Dentition in Mammals

Janene Bufkin

Sponsor: Dr. Leslie Jones

As I look forward to a career in dentistry, I am fascinated by the dentition among the skulls located inside the Hugh C. Bailey Science Center atrium. Dentition refers to teeth, which are a variety of individual bone structures with distinct morphological features. The very first mammal came from a reptile with teeth that are composed of the same size and shape, also known as homodontic teeth. Over time, mammalian teeth changed through evolution to become heterodontic with a variety of shapes and sizes. The unique features of teeth are characterized based on the mammal's diet. Due to the evolutionary challenges that have come about within the passing of time, mammals' teeth evolved. Geographic features such as landscape and weather have altered, causing some mammals to change their habits to adapt to the environment. The changes in their teeth result from natural selection. Over generations offspring inherit changes for positive adaptations from the parents and pass those down to their offspring. The appearances of mammals' teeth have evolved this way. This poster will portray the research I have done on this evolution of teeth and the colorful signs I make to explain this process in the Bailey Science Center.

Department of Chemistry and Geosciences Chemistry

Deep Eutectic Solvents: A Home for Myoglobin Biocatalysis

Kaylee J. O'Quinn

Sponsor: Dr. Gopeekrishnan Sreenilayam

Deep Eutectic Solvents (DESs) are sustainable solvents that are formed from a mixture of a hydrogen bond acceptor, typically a quaternary ammonium salt, and a hydrogen bond donor. Some of the properties that make DES favorable are low volatility, low flammability, a wide liquid state, low toxicity, ease of preparation, cost-effectiveness, and partial biodegradability. DESs are said to be safe and functional solvents in numerous enzyme reactions, but no conclusions have been made about the effectiveness of these solvents in myoglobin-catalyzed organic reactions. Therefore, we are exploring DESs as an option for myoglobin biocatalysis with fresh myoglobin. Biocatalysis employs enzymes to efficiently complete complex organic reactions under mild reaction conditions. Engineered sperm whale myoglobin variants are used as green catalyst to test the viability of aerobic biocatalysis using C-C and C-N bond forming reactions. The process of how new myoglobin was made will be explained. These reactions will be performed under usual aqueous buffer solutions in aerobic conditions with aniline and in five green deep eutectic solvents. The aim of this experiment is to find out if myoglobin-catalyzed reactions are possible in DESs and what the limitations are.

Deep Eutectic Solvents

Mason A. Griffin, Kaylee J. O'Quinn and David B. Vasquez

Sponsor: Dr. Gopeekrishnan Sreenilayam

College of Science and Mathematics, Chemistry

Biocatalysis is a renewable and economical reaction method with exceptional regio-, chemo-, and stereo-selectivity. This process employs modified enzymes to complete complex organic reactions under mild reaction conditions for industrial and pharmaceutical purposes. For this experiment, mutant Sperm Whale Myoglobin (MbH64V, V68A) will be grown, harvested, and purified from special E. Coli bacteria and used to facilitate multiple organic reactions. We will perform all reactions under both aerobic and anaerobic conditions in a phosphate buffer to collect baseline data. Then, we will complete each reaction in five different Deep Eutectic Solvents (DESs). DESs are sustainable and tuneable solvents formed from mixing specific molar ratios of hydrogen bond acceptors like choline chloride and a hydrogen bond donor. These solvents have many promising properties such as low volatility, flammability, and toxicity. They are also easy to prepare, partially biodegradable, relatively cheap, and have wide liquid states. DESs have proven to be safe and effective for use in various enzymatic reactions, but little data surrounding myoglobin-catalyzed organic reactions has been collected. For this experiment, 5 different DESs will be used in aerobic conditions to complete reactions of styrene and aniline with ethyl diazoacetate, and each reaction's progress will be analyzed by gas chromatography. Currently, aerobic myoglobin-catalyzed reactions in an aqueous solvent have negligible yields due to the atmospheric oxygen-storing properties of the heme group. However, the varying solvent-enzyme interactions with DESs may hinder myoglobin's oxygen affinity and make aerobic reactions a worthwhile prospect. Through this project, we aim to determine if DESs' specialized properties will complete aerobic myoglobin-catalyzed reactions in yields comparable or superior to an anaerobic aqueous reaction.

An Evaluation of the Antibacterial Efficacy of Various Ethnomedicinal Plants

Ashton Z. Abbott and Clayton J. Gall, Airionna Fordham and Krunal Patel

Sponsors: Dr. G. Sreenilayam, Dr. Tolulope Salami and Dr. Xiaomei Zheng

As modern medicine continues to evolve there is a push for new treatments to be developed that are better suited for their intended uses. To aid in this search we have employed traditional knowledge of ethnomedicinal plants to find natural products that could benefit modern healthcare. This study aims to extract and identify possible antibacterial agents from a panel of ten different ethnomedicinal plants. The plant materials were exposed to various organic solvents which differed in properties in attempts to extract as many compounds as possible. The extractions were then concentrated and combined with other extractions from the same plant to ensure a large proportion of extracted materials were present in testing. These extracts were then tested for anti-bacterial properties through antibiotic disk assays against various clinically significant bacteria. The plants that showed promising antibiotic activity in the assays were then recorded for further testing to find out what was responsible for the activity.

Myoglobin-Catalyzed Aerobic Cyclopropanation of Styrene in Deep Eutectic Solvents

Mason A. Griffin

Sponsor: Dr. Gopeekrishnan Sreenilayam

Biocatalysis is a renewable and economical reaction method with exceptional regio-, chemo-, and stereo-selectivity. This process employs modified enzymes to complete complex organic reactions under mild reaction conditions for industrial and pharmaceutical purposes. For this experiment, mutant Sperm Whale Myoglobin (MbH64V, V68A) will be grown, harvested, and purified from special E. Coli bacteria and used to facilitate a cyclopropanation reaction with ethyl diazoacetate (EDA) and styrene. This reaction will be performed under both aerobic and anaerobic conditions in a phosphate buffer to collect baseline data. Then, we will complete the reaction in five different Deep Eutectic Solvents (DESs). DESs are sustainable and tunable solvents formed from a mixture of a hydrogen bond acceptor, typically a quaternary ammonium salt, and a hydrogen bond donor. Once formed, the resulting solvent has many favorable properties like low volatility, flammability, and toxicity. They are also easy to prepare, partially biodegradable, cost-effective, and have a wide liquid state. DESs have proven to be safe and effective for use in various enzymatic reactions, but no data has been collected regarding their viability in myoglobin-catalyzed organic reactions. For this experiment, 5 different DESs will be used in aerobic conditions to complete the cyclopropanation reaction, and each reaction's progress will be analyzed by gas chromatography. Currently, aerobic myoglobin-catalyzed reactions in an aqueous solvent have extremely low yields due to the atmospheric oxygen-storing properties of the heme group. However, the varying solvent-enzyme interactions with DESs may hinder myoglobin's ability to bind oxygen and make aerobic reactions a worthwhile option. The primary aim of this research is to determine if DESs' specialized properties will complete aerobic cyclopropanation reactions in similar or superior yields compared to aqueous reactions.

Green Tech Oyster Restoration: Saving the Ocean One Bivalve at a Time

Thomas Wilson

Sponsor: Dr. Thomas Manning

Oysters are a critical environmental tool that has a tremendous impact on coastal ecosystems. Oyster bars prevent shoreline erosion, which is becoming a growing problem as destructive storms are on the rise. Oysters are a keystone species responsive for a number of species, from various fish to crabs. Finally, a single oyster can filter up to 50 gallons of water per day, making an oyster bar with millions of oysters an incredible natural filtration system. Worldwide oyster populations are down almost 90%. Our group is testing several materials for use in oyster restoration that are a green technology. We have received permits from the state of Florida and the United States Army Corp of Engineers for our three-year project. This talk will outline our current materials and some of their specific advantages compared to other restoration methods. Scanning Electron Microscopy is used to examine the fine structure of oyster shells and elemental analysis provides some interesting measurements, such as the identification of tellurium in the shells. <https://languages.oup.com/google-dictionary-en/>
Chem. Educator 2009, 14, 155–157 155; The Periodic Table, Element Symbols and Pattern Recognition, Thomas J. Manning, The Chemical Educator, S1430-4171(09) 42254-3, <http://chemeducator.org/papers/0014004/14090155tm.pdf>

Bryostatin: A Economical Approach to Synthesize a Prominent Pharmaceutical Age

Mickey Shery

Sponsor: Dr. Thomas Manning

College of Science and Mathematics, Chemistry

TIE University offers a “Fostering Entrepreneurship” contest. The contest offers \$20,000 as a start-up fee for students with business ideas. The students must design and apply to enter the program. Once they have entered and approved, they are matched with a coach from the Atlanta business community. To be accepted, a sixty-second video is required and that is what is featured here. Once accepted, the students are required to participate in sessions that work on business models, business plans, practice round pitch, qualifying round, and the final Atlanta round. The purpose of the program is to teach students to integrate research and business to spark a passion for entrepreneurship. This project examines an alternative to traditional means of obtaining Bryostatin. Our method extracts the compound from marine bacteria and can be used to lower the cost of drugs treating neurological diseases with the goal of lowering the cost of drugs treating illness such as some cancers, Alzheimer’s, HIV, and multiple sclerosis. Currently, our compound has been accepted into NIH trials.

A Versatile Game to Familiarize Students of All Ages with New Topics

Kathrine Hollister

Sponsor: Dr. Thomas Manning

College of Science and Mathematics, Chemistry

TIE University offers a “Fostering Entrepreneurship” contest. The contest offers \$20,000 as a start-up fee for students with business ideas. The students must design and apply to enter the program. Once they have entered and approved, they are matched with a coach from the Atlanta business community. To be accepted, a sixty-second video is required and that is what is featured here. Once accepted, the students are required to participate in sessions that work on business models, business plans, practice round pitch, qualifying round, and the final Atlanta round. The purpose of the program is to teach students to integrate research and business to spark a passion for entrepreneurship. This project represents research on creating a versatile card game that can be used at home or in schools to teach any topic from chemistry to music to Chinese languages without any prior knowledge of the subject. The fun and colorful cards help make learning fun, fast moving, and help students retain the information.

A New Drug and a Pitch Contest

Thomas E. Wilson, Micky K. Sherry and Jalon W. Palmer

Sponsor: Dr. Thomas Manning

This work pulls together in vitro and in vivo data for the treatment of various types of cancers and neurological diseases by bryostatin, a marine natural product. We suggest that the chemical defense used by marine bacteria against constant attacks by viruses in the ocean, particularly phages, may provide insight to how human maladies could be treated. Specifically, bacterium likely use a multi-molecule defense and not a single molecule. This multi-molecule approach may translate into more efficient pharmaceutical agents when compared to single molecule treatments. Our experience of developing a business model, a business plan and presenting it to businessmen and investor in an Atlanta based business competition will be outlined.

Ni-Prussian Blue Analogs as Electrocatalyst for CO₂ Reduction

Tiwaloluwa Salami

Sponsor: Dr. Tolulope O. Salami

The use of fossil fuel has led to the ever-increasing amount of carbon dioxide in the atmosphere; therefore, it is important to find ways to recycle the carbon dioxide into useful fuels. Our current research involves the development of Prussian Blue electrocatalyst towards carbon dioxide reduction. Prussian Blue is a cubic crystal lattice, with intrinsic micropores and enlarged micropores, large enough to trap carbon dioxide, secondly many combinations of metals can easily be synthesized. Our poster will discuss recent research on preparation of Ni-Prussian blue electrocatalyst, the study of the catalyst using Cyclic voltammetry, Linear voltammetry, Scanning Electron Microscope, and many other analytical methods will be showcased.

Using A Sudoku Style Puzzle to Introduce Terminology to Active Learners in the Field of Astronomy

Syren M. Letizia and Brandie M. Seber

Sponsor: Dr Thomas Manning

Sudoku is a puzzle in which players insert the numbers one to nine into a grid consisting of nine squares subdivided into a further nine smaller squares in such a way that every number appears once in each horizontal line, vertical line, and square. (1). The game emphasizes a logic-based approach to working with numbers. Our puzzle is focused on Constellations and their stars, and includes nine constellations such as Centaurus, Orion, Leo, Sagittarius, Capricornus, Scorpius, Ophiuchus, Pegasus, and Ursa Major. The player is given the words and a two-letter abbreviation. A similar set of rules applies as in Sudoku except abbreviations replace numbers. For example, instead of the number “1”, that is used in 9 boxes, we use nine individual abbreviations. For example, one of our nine constellations is Pegasus, and its chosen nine stars and abbreviations are Alpheratz (Al), Algenib (Ge), Scheat (Ch), Matar (Ma), Homam (Ho), Enif (En), Sabik (Bi), Sadalbari (Sa), Markab (Ar). In addition to a strategy, the player learns words and terminologies associated with different fields. This approach was originally demonstrated using the elements of the Periodic Table (2). 1. <https://languages.oup.com/google-dictionary-en/> 2. Chem. Educator 2009, 14, 155–157 155; The Periodic Table, Element Symbols and Pattern Recognition, Thomas J. Manning, The Chemical Educator, S1430-4171(09) 42254-3, <http://chemeducator.org/papers/0014004/14090155tm.pdf>

Using A Sudoku Style Puzzle to Introduce Terminology to Active Learners in the Field of Anatomy and Physiology

Malika Millender

Sponsor: Dr. Thomas Manning

Sudoku is a puzzle in which players insert the numbers one to nine into a grid consisting of nine squares subdivided into a further nine smaller squares in such a way that every number appears once in each horizontal line, vertical line, and square. (1). The game emphasizes a logic-based approach to working with numbers. My puzzle is focused on organs in the human body and includes nine subtopics such as the heart, the brain, the skin, and the liver. The player is given the words and a two-letter abbreviation. A similar set of rules applies as in Sudoku except abbreviations replace numbers. For example, instead of the number “1”, that is used in 9 boxes, we use nine individual abbreviations. For example, one of my nine topics of groups is the heart and its nine individual names, and abbreviations are cardiomyocytes (CM), name (abv), In addition to a strategy, the player learns words and terminologies associated with different fields. This approach was originally demonstrated using the elements of the Periodic Table (2). (1)<https://languages.oup.com/google-dictionary-en/> (2) Chem. Educator 2009,, 155–157 155; The Periodic Table, Element Symbols and Pattern Recognition, Thomas J. Manning, The Chemical Educator, S1430-4171(09) 42254-3, <http://chemeducator.org/papers/0014004/14090155tm.pdf>

Using a Sudoku Style Puzzle to Introduce Terminology to Active Learners in the Field of Dogs

Alexis Green

Sponsor: Dr. Thomas Manning

Sudoku is a puzzle in which players insert the numbers one to nine into a grid consisting of nine squares subdivided into a further nine smaller squares in such a way that every number appears once in each horizontal line, vertical line, and square (1). The game emphasizes a logic-based approach to working with numbers. Our puzzle is focused on dogs and includes nine subtopics such as herding group, hound group, toy group, non-sporting group, terrier group, working group, miscellaneous class, and foundation stock service (FSS). The player is given the words and a two-letter abbreviation. A similar set of rules applies in Sudoku except abbreviations replace numbers. For example, instead of the number “1”, that is used in 9 boxes, we use nine individual abbreviations. For example, one of the nine topics of groups is terrier group, and its nine individual names and abbreviations are Bull Terrier (BT), Australian Terrier (AT), Bellington Terrier (LT), Border Terrier (RT), Cairn Terrier (CT), Cesky Terrier (KT), Irish Terrier (IT), Rat Terrier (RT), and Scottish Terrier (ST). In addition to the strategy, the player learns words and terminologies associated with different fields. This approach was originally demonstrated using the elements of the Periodic Table (2). <https://languages.oup.com/google-dictionary-en/> Chem. Educator 2009, 14, 155–157 155; The Periodic Table, Element Symbols and Pattern Recognition, Thomas J. Manning, The Chemical Educator, S1430-4171(09) 42254-3, <http://chemeducator.org/papers/0014004/14090155tm.pdf> .

Using A Sudoku Style Puzzle to Introduce Terminology to Active Learners in the Field of Forensic Science

Carissa G. Reonas and Layla N. Gay
Sponsor: Dr. Thomas Manning

Sudoku is a puzzle in which players insert the numbers one to nine into a grid consisting of nine squares subdivided into a further nine smaller squares in such a way that every number appears once in each horizontal line, vertical line, and square. (1). The game emphasizes a logic-based approach to working with numbers. Our puzzle is focused on Forensic Science and includes nine subtopics such as Toxicology, Forensic Entomology, Firearms/Toolmarks, and Post-mortem changes. The player is given the words and a two-letter abbreviation. A similar set of rules applies as in Sudoku except abbreviations replace numbers. For example, instead of the number “1”, that is used in 9 boxes, we use nine individual abbreviations. For example, one of our nine topics of groups is Post-mortem Changes and its nine individual names and abbreviations are Corneal opacity (Co), Pallor mortis (Pm), Algor mortis (Am), Rigor mortis (Rm), Livor mortis (Lm), Putrefaction (Pu), Skeletonization (Sk), Fossilization (Fz), and Mummification (Mm). In addition to a strategy, the player learns words and terminologies associated with different fields. This approach was originally demonstrated using the elements of the Periodic Table (2). <https://languages.oup.com/google-dictionary-en/> Chem. Educator 2009, 14, 155–157 155; The Periodic Table, Element Symbols and Pattern Recognition, Thomas J. Manning, The Chemical Educator, S1430-4171(09) 42254-3, <http://chemeducator.org/papers/0014004/14090155tm.pdf>

Using A Sudoku Style Puzzle to Introduce Terminology to Active Learners in the Field of Neurological Drugs

Eldred B. Jones
Sponsor: Dr. Thomas J. Manning

Sudoku is a puzzle in which players insert the numbers one to nine into a grid consisting of nine squares subdivided into a further nine smaller squares in such a way that every number appears once in each horizontal line, vertical line, and square. (1). The game emphasizes a logic-based approach to working with numbers. Our puzzle is focused on neurological drugs and includes nine subtopics such as anxiety, ADHD, depression, and schizophrenia medications. The player is given the words and a two-letter abbreviation. A similar set of rules applies in Sudoku except abbreviations replace numbers. For example, instead of the number “1”, that is used in 9 boxes, we use nine individual abbreviations. For example, one of our nine topics of groups is anxiety medication, and its nine individual names and abbreviations are Celexa (cx), Lexapro (lx), and Prozac (pz) . In addition to a strategy, the player learns words and terminologies associated with different fields. This approach was originally demonstrated using the elements of the Periodic Table (2). <https://languages.oup.com/google-dictionary-en/> Chem. Educator 2009, 14, 155–157 155; The Periodic Table, Element Symbols and Pattern Recognition, Thomas J. Manning, The Chemical Educator, S1430-4171(09) 42254-3, <http://chemeducator.org/papers/0014004/14090155tm.pdf>

Using A Sudoku Style Puzzle to Introduce Terminology to Active Learners in the Field of Plants in The Southeastern United States

Pearce A. Persaud
Sponsor: Dr Thomas Manning

Sudoku is a puzzle in which players insert the numbers one to nine into a grid consisting of nine squares subdivided into a further nine smaller squares in such a way that every number appears once in each horizontal line, vertical line, and square. (1). The game emphasizes a logic-based approach to working with numbers. Our puzzle is focused on plant life in the Southeastern United States and includes nine subtopics such as trees, shrubs, grasses, and weeds. The player is given the words and a two-letter abbreviation. A similar set of rules applies as in Sudoku except abbreviations replace numbers. For example, instead of the number “1”, that is used in 9 boxes, we use nine individual abbreviations. For example, one of our nine topics of groups is trees and its nine individual names and abbreviations are Southern Magnolia (TM), Southern Live Oak (TL), River Birch (TR), Loblolly Pine (TL), Longleaf Pine (TP), Southern Red Oak (TS), Sweetgum (TG), Blackgum (TB), White Oak (TW). In addition to a strategy, the player learns words and terminologies associated with different fields. This approach was originally demonstrated using the elements of the Periodic Table (2). • <https://languages.oup.com/google-dictionary-en/> • Chem. Educator 2009, 14, 155–157 155; The Periodic Table, Element Symbols and Pattern Recognition, Thomas J. Manning, The Chemical Educator, S1430-4171(09) 42254-3, <http://chemeducator.org/papers/0014004/14090155tm.pdf>

The Model for a Card Game to Introduce All Ages to a New Fields: From Science to Liberal Arts, Music to Economics

Katherine Hollister
Sponsor: Dr. Thomas Manning

The card game focuses on a specific format and is adapted to various topics. The first aspect is the layout of the card which includes a topic, descriptions, fun facts and an image. The educational games focus on the idea that the first stage of learning in any field is familiarization. The second key point is that the game requires no proper knowledge of a topic or field. The cards introduce topics and facts in a social and fun environment. The game is designed to be played by more than one player, although one version of it can be played by one player. The goal of the game is to gather as many cards as possible with the winner being the one with the most cards at the end of the game. As a proof of concept, the American Chemical Society (the largest science organization worldwide) adapted our Chem Cards game: <https://www.chemedx.org/blog/open-source-chem-card-game> We have filed a provisional patent application and area in the process of filing for a business license. We have entered into the TIE Atlanta Business Plan Competition.

The use of Copper Crystals to Improve Cancer Drug Delivery Rates

Carolina Aponte-Rodríguez, Vanessa Brignolle and Mariam Duarte Marcia
Sponsor: Dr. Thomas Manning

The focus of this project is developing a novel excipient, a pharmaceutical substance mixed with the active ingredient in the finished drug formulation. For example, in Aspirin tablets Acetylsalicylic acid is the active ingredient, and the inactive ingredients or excipients include FD&C red #40, FD&C yellow #6, methacrylic acid copolymer, microcrystalline cellulose, pregelatinized starch, silicon dioxide, sodium bicarbonate, sodium lauryl sulfate, stearic acid, talc, and triethyl citrate. Excipients can facilitate long-term stabilization, add taste, control the release rate, increase solubility, and increase adsorption at a cellular level or serve as diluents. In this project we are using the Cu (II) cation and the crystals it can make as a delivery agent for cancer drugs. Cancer patients have higher than average copper levels in their serum and in the cancerous region when compared to an individual who does not have cancer. Copper is essential for the metabolism and growth of healthy cells, in cancer cells, copper can dysregulate and facilitate the growth of tumors. The Cu (II) increases the water solubility of a target molecule (Taxol) and provides a disguise to overcome drug resistance by the tumor. In this presentation, we will outline our work on the syntheses of copper crystals that contain cancer drugs and some of their properties including their ability to dissolve, improve water solubility, and overcome cancer drug resistance. Shown below are copper crystals that contain a medication. The copper crystals will be dissolved into micrometer sized particles.

Separation and Purification of Bryostatin Produced by Microbes

Jacqueline Farmer, Lindsey Henderson and Ashtyn Puckett
Sponsor: Dr. Thomas Manning

Bryostatin is a marine natural product that is produced by bacteria that reside in the ocean. As a pharmaceutical with much potential, it has entered clinical trials as a therapeutic for neurological diseases such as Alzheimer's, Multiple Sclerosis, Fragile X, as well as different forms of cancer. Because of its complexity in design, there is much difficulty in producing a Bryostatin analog that is economical and viable in function in comparison to its natural counterpart. A novel method is sought to produce the drug using a green technology. This presentation will focus on the use of a novel form of paper chromatography to separate bryostatin from the matrix our group uses to extract this drug from products obtained from the ocean. The chromatographic paper is embedded with transition metals such as Fe(III), Fe(II), Cu(II), and/or Zn(II). Bryostatin contains a bryophan ring that is lined with oxygen atoms that have negative partial charges that allows the cations to fit in the ring and add solubility to the structure, increasing our ability to separate it from other species (i.e. salts, small organics) that are in the matrix. Efforts by the various analytical methods mentioned are in advancement of reducing structural complexity for efficient production, reducing economic barriers in novel synthesis, and expanding options of neurologic therapeutic indicators exhibited by drugs such as Bryostatin.

Carotenoid Extraction using Deep Eutectic Solvents

Fiona C. Brightman

**Sponsors: Dr. Alexandrina L. Focsan and
Dr. Gopeekrishnan Sreenilayam**

Carotenoids are innate pigments located algae, plants, and photosynthetic bacteria. Fruits and vegetables that are rich in carotenoids include spinach, kale, watermelon, carrots, tomatoes, and oranges. Carotenoids are widely used in pharmaceutical and food industries worldwide due to their health benefits. For example, carotenoids are used as antioxidants in the human body to help prevent chronic diseases. The dilemma is that humans cannot naturally synthesize such pigments, so they must be consumed through fruits and vegetables.

This research focuses on using green solvents, commonly known as deep eutectic solvents (DES) to extract carotenoids successfully and efficiently from fruits and vegetables. There are many advantages to using these “green friendly” DES solvents such as their biodegradability, inexpensive cost, and straightforward preparation. Once extracted, the carotenoids will then be analyzed using a high-pressure liquid chromatography (HPLC) instrument with a C30 carotenoid column.

Bioactive Excipients for Increasing the Efficacy of Antibiotics, Cancer Drugs and Antivirals for Pox Viruses

Capri Persaud and Akshil Patel
Sponsor: Dr. Thomas Manning

A Copper-Sucrose complex has been used as an excipient for a new class of medications, including treating tuberculosis and drug-resistant tuberculosis, against types of cancer including prostate, breast, CNS, lung, ovarian, leukemia, renal, melanoma, and colon cancers; and two POX viruses. All testing was conducted at the National Institutes of Health. Excipients are molecular species that are included in medications for nonmedical reasons including stabilization of the drug, slowing the dissolution rate, improving water solubility, favoring a medication, and allowing the tablet to dissolve at a predicted rate. Our approach using a Cu(II) complex shows it has some typical excipient properties but also adds activity to the medications.

The Application of One and Two-Dimensional Nuclear Magnetic Resonance (NMR) Technique to Identify Four Beta-lactam (penicillin's) Molecules

***Alexa Luna, Brystan T. Carthon, Carlton W. Francis, Hope E. Smith,
Kenya J. Copeland, Airionna S. Fordham, Kirby C. Perry,
Micky K. Sherry and Vanessa N. Brignolle
Sponsor: Dr. Thomas Manning***

Beta-lactams are a large group of antibiotics that includes over one hundred medications (small molecules). Because of their similarities in size, polarity, structural features, etc., they can be difficult to separate and quantify. In this study, we examine 4 beta-lactams including Amoxicillin, Penicillin V, Penicillin G, and Cephalosporin. Five NMR techniques are used including one-dimensional, ¹H (proton) and ¹³C (carbon), NMR, and two-dimensional techniques (Correlation, COSY), HSQC (Heteronuclear Single Quantum Coherence), and HMBC (Heteronuclear Multiple Bond Correlation). COSY and HSQC are modeled to determine proton-carbon single-bond correlations. HMBC provides details related to interactions between carbon and proton atoms that are separated by 2, 3, and in some cases 4 bonds. The HMBC technique is also used to model the spectra so experimental values can be properly evaluated. Hartree-Fock, a theorem used to solve quantum mechanics problems, is coupled with the 6-31G8 basis set and utilized to calculate values.

Synthesis and Antibacterial Properties of Chiral Schiff Bases

**Anthony M. Giles
Sponsors: Dr. Barbas and
Dr. Gopekrishnan Sreenilayam**

Chiral Schiff Bases are compounds containing both a carbon-nitrogen double bond and a chiral (or asymmetric) center. Schiff Bases are used for various purposes including as a catalyst in organic reactions. They are also highly useful as anti-bacterial, anti-fungal, anti-malarial, and even as anesthetics. In this project, several Chiral Schiff bases were synthesized via the condensation of both (R) and (S) chiral primary amines with various aldehydes in presence of dry silica gel as catalyst and dry diethyl ether as solvent under room temperature. The purity and identity of these products were measured using Gas Chromatography-Mass Spectrometry (GC-MS) technique. The crude Chiral Schiff Bases were then tested for their antibacterial properties against *Bacillus Subtilis*, *Serratia Marcescens*, *E. coli*, and *Micrococcus luteus* bacteria and their biofilm inhibition against streptococcus mutant biofilm. Antibiotic disk assays and biofilm crystal violet methods were utilized to perform the experiment.

Evaluation of the Antibacterial Properties of Ethnomedicinal Plants

Airionna Fordham and Krunal Patel
Sponsors: Dr. Gopeekrishnan Sreenilayam,
Dr. Tolulope Salami and Dr. Xiaomei Zheng

The importance and application of natural products has increased in recent years due to curiosity about the matter. To explore their potential, several plants harvested in Africa were tested for their antibacterial properties. These Ethnomedicinal plants play a major role in the communities across Africa where they were harvested. They are known for their antiseptic and astringent properties and traditionally used for treating wounds, bronchial catarrh, and inflammation. Their natural products were extracted using organic solvents, to yield the most product. The antibiotic disk assay method was utilized to perform the experiment. Extracts with promising activity will be tested using GC-MS to identify the main components.

Innovations in Car Fuel Sources

Muhammad B. Ashfaq and Danny Warren
Sponsor: Dr. Thomas Manning

Sudoku is a puzzle in which players insert the numbers one to nine into a grid consisting of nine squares subdivided into a further nine smaller squares in such a way that every number appears once in each horizontal line, vertical line, and square. (1). The game emphasizes a logic-based approach to working with numbers. Our puzzle is focused on European Super Cars and includes nine subtopics such as Porche, Lamborghini, Ferrari, and Mercedes. The player is given the words and a two-letter abbreviation. A similar set of rules applies as in Sudoku except abbreviations replace numbers. For example, instead of the number “1”, that is used in 9 boxes, we use nine individual abbreviations. For example, one of our nine topics of groups is Audi and its nine individual names and abbreviations are Audi Q4 e-tron(Q4), Audi Q8(Q8), Audi A8(A8), Audi RS(RS), Audi Q7(Q7), Audi A3(A3), Audi TT (TT), Audi S8(S8), Audi TTRS(TTRS). In addition to a strategy, the player learns words and terminologies associated with different fields. This approach was originally demonstrated using the elements of the Periodic Table (2).1. <https://languages.oup.com/google-dictionary-en/> 2. Chem. Educator 2009, 14, 155–157 155; The Periodic Table, Element Symbols and Pattern Recognition, Thomas J. Manning, The Chemical Educator, S1430-4171(09) 42254-3, <http://chemeducator.org/papers/0014004/14090155tm.pdf>

Synthesis and Antibacterial Properties of Chiral Schiff Bases

Anthony M. Giles
Sponsors: Dr. Barbas and
Dr. Gopeekrishnan Sreenilayam

Chiral Schiff Bases are compounds containing both a Carbon Nitrogen double bond and a chiral (or asymmetric) center on the carbon in that Carbon Nitrogen double bond. Schiff Bases are used for various purposes including catalytic reactions, anti-bacterial, anti-fungal, anti-malarial, and even anesthetics. These Chiral Schiff bases were synthesized on-site via the condensation of chiral primary amines and aldehydes. Chiral Schiff Bases were then tested for their antibacterial properties against *Bacillus Subtilis*, *Serratia Marcescens*, *E. coli*, and *Micrococcus luteus* bacteria and their biofilm inhibition against streptococcus mutant biofilm. Antibiotic disk assays and biofilm crystal violet methods were utilized to perform the experiment.

Stability of Modified Heme Biocatalyst in DES: UV-Vis Study

David B. Vasquez
Sponsor: Dr. Gopeekrishnan Sreenilayam

The use of biocatalysts to facilitate chemical reactions is increasingly favored in organic synthesis. Biocatalysts offer exceptional selectivity in chemical transformations with high efficiency and are environmentally sustainable, cost-effective, and operate under milder conditions compared to traditional methods. Aqueous/organic co-solvent-based biocatalytic reactions suffer from disadvantages such as lack of substrate scope and substrate solubility, catalyst stability, catalyst recycling, decreased reaction kinetics, high toxicity, low sustainability index, etc. This is where deep eutectic solvents come into consideration. Deep eutectic solvents (DES) are a class of solvents synthesized from certain cheap, biodegradable, and naturally occurring renewable components. This, along with their low toxicity, non-flammability, and negligible vapor pressure make DES favorable for biocatalysis. A pure DES solvent system or aqueous-DES mix for biocatalytic reactions overcomes the limitations that organic solvent based biocatalytic reactions bear. This project's objective will be to establish the optimal DES solvent for biocatalyst stability and activity. Various Choline chloride and Betaine based DES's will be synthesized to study engineered myoglobin-DES combinations. The stability of the biocatalyst within each DES will be monitored through UV-Vis spectroscopy.

Hydrophobic Deep Eutectic Green Solvents for Carotenoid Extraction

Thomas Rideau IV and Myles J. Monroe

Sponsor: Dr. Focsan and Dr. Gopeekrishnan Sreenilayam

Carotenoids, the natural pigments abundant in fruits and vegetables, hold important significance across various sectors all over the world, including health, food, and pharmaceuticals due to their health-promoting properties. These compounds serve as potent antioxidants for the human body. Currently, there's a notable trend towards utilizing environmentally friendly solvents for the efficient extraction of pigments. While volatile organic solvents (VOS) have conventionally been utilized, there's a growing preference for greener alternatives such as deep eutectic solvents (DES). DES are praised for their biodegradability, low toxicity, cost-effectiveness, and simple production methods. The focus of this study is to employ multiple hydrophobic DES variants derived from choline chloride and menthol, specifically selected for their low eutectic points. The DES may facilitate the extraction of carotenoid pigments from natural sources such as tomato, pepper, carrots, etc. compared to the current industrial standards. By using these non-toxic DES systems, this research aims to contribute to the development of more sustainable, less toxic, and efficient methods for extracting valuable carotenoids from natural sources, thereby promoting advancements in various industries reliant on these compounds.

Synthesis of Iron(III) Oxide Nanoparticles For Nanocrystalline Photoanodes

Jason R Phillips

Sponsor: Dr. Linda de la Garza

The mineral hematite (α -Fe₂O₃, iron(III) oxide) is of particular interest for use in photoelectrochemical solar cells. The photocatalytic ability to split water to produce hydrogen gas and light absorption in the visible range make iron oxide a great candidate for research and development in fields like alternative fuels and solar energy. Preparation of the electrodes for the photoelectrochemical cells, photoanodes, is done with colloidal solutions of α -Fe₂O₃ nanoparticles, which are typically synthesized via the hydrolysis of iron(III) chloride (FeCl₃) solutions. Rust, a commonly found material, contains iron oxides, mostly in the form of α -Fe₂O₃. The synthesis of the colloidal nanoparticle solutions using lab grade Fe₂O₃ and recycled rust was carried out and confirmed by UV-VIS spectroscopy. The absorbance spectra of the dialyzed and concentrated solutions showed the same absorbance features as that of the typical hydrolysis reaction from FeCl₃. The recycling of rust to obtain colloidal solutions was therefore possible due to careful control of the concentration of reagents and in the case of the recycled rust, the complete oxidation of iron ions to Fe³⁺ ions. Fabrication of photoanodes is ongoing to characterize the overall energy conversion efficiency production of these materials.

Dimerization of Anthracene

Shipra Gupta and Paola Roblero Lopez

Sponsor: Dr. Shipra Gupta

The sunlight's effects on human skin can lead to serious consequences such as skin cancer and other mutations of cells when exposed to high doses of it [1]. These effects are caused when our DNA nucleobases absorb the UVB radiation that is emitted from the sun, and it allows for photoreactions to occur [2]. These reactions that take place are the [2+2] photocycloaddition reactions that lead to the formation of harmful substances as well as other byproducts to accumulate in our DNA [2]. By using anthracene, we can carry out a resemblance of the [2+2] photocycloaddition reactions that would occur during DNA mutation. To do this we will focus on a well-known [2+2] photocycloaddition reaction which is the dimerization of anthracene, a photoreaction that involves the joining of two anthracene components [3]. This will allow us to evaluate what occurs during this type of reaction when it comes in contact with sunlight and more importantly to bring attention to the potential harms of the sun [4]. This project seeks to serve as an educational lab procedure for the teaching of [2+2] photocycloaddition reactions to undergraduate students and aid in providing a better insight on their effects in our daily lives.

Tailoring [2+2] Photocycloaddition Reaction of Acenaphthylene to Demonstrate Thymine/ Adenine Dimerization in an Organic Chemistry Lab

Alexandra E. Rivero and Lisa M. Shepherd

Sponsor: Dr. Shipra Gupta

Skin cancer happens when over exposure to UV- light changes healthy melanocytes into cancer cells.1 UV-light disrupts the normal cellular processes in DNA, one disruption is the [2+2] photocycloaddition reaction in which the carbon-carbon double bond electrons react forming a cyclobutane ring from the thymine or adenine DNA bases.1 The photodimerization of acenaphthylene (ACN) exhibits the same [2+2] photocycloaddition reaction seen in DNA base dimerization.2 To facilitate the study of this process, acenaphthylene is used as a mimic for thymine or adenine, owing to its smaller and less complex structure. The study further emphasizes the importance of considering the absorption spectrum dimers to determine the appropriate UV-light exposure wavelengths.2 This research provides valuable insights for students offering a comprehensive understanding of the [2+2] photocycloaddition reaction and its implications in cancer progression within a 3-hour allotted lab. [1] Schreier, W. J., Schrader, T. E., Koller, F. O., Gilch, P., Crespo-Hernández, C. E., Swaminathan, V. N., Carell, T., Zinth, W., & Kohler, B. (2007). Thymine Dimerization in DNA Is an Ultrafast Photoreaction. *Science*, 315(5812), 625–629. <https://doi.org/10.1126/science.1135428> [2] Haga, N., Takayanagi, H., & Tokumaru, K. (1997). Mechanism of Photodimerization of Acenaphthylene. *The Journal of Organic Chemistry*, 62(11), 3734–3743. <https://doi.org/10.1021/jo962397o>

Expression of an Aquaporin Gene in Yeast

Carlton W. Francis
Sponsor: Dr. Donna Gosnell

Aquaporins are proteins that selectively transport water across membranes. The current work is part of a larger research project to produce aquaporin protein in sufficient amounts to create a biomimetic film for the desalination of water. Prior bioinformatics research found an aquaporin gene in a micro alga called *Trebouxia*. This gene was chosen because of its high sequence similarity to an aquaporin gene in a salt water sea lettuce, *Ulva mutabilis*. The hypothesis is that aquaporin proteins from salt water organisms may be better choices for the desalination of water than from other species. Previously, this gene was incorporated into a plasmid and cloned into yeast (*S. cerevisiae*). The current project seeks to examine the expression of aquaporin protein in yeast both qualitatively and quantitatively. This will be compared to a parallel project doing the same in *E. coli*.

Expression of an Aquaporin Gene in E. coli

Caidyn D. Carr
Sponsor: Dr. Donna Gosnell

Aquaporins are proteins that selectively transport water across membranes. The current work is part of a larger research project to produce aquaporin protein in sufficient amounts to create a biomimetic film for the desalination of water. Prior bioinformatics research found an aquaporin gene in a micro alga called *Trebouxia*. This gene was chosen because of its high sequence similarity to an aquaporin gene in a salt water sea lettuce, *Ulva mutabilis*. The hypothesis is that aquaporin proteins from salt water organisms may be better choices for the desalination of water than from other species. Previously, this gene was incorporated into a plasmid and cloned into bacteria (*E. coli*). The current project seeks to examine the expression of aquaporin protein in *E. coli* both qualitatively and quantitatively. This will be compared to a parallel project doing the same in yeast.

Photochemical Study of Vitamin D Field in Supramolecular Host System

Reagan G. Newsome and Keishona D. Gordon
Sponsor: Dr. Shipra Gupta

In recent years, studies have been produced to understand the mechanisms within the synthesis of vitamin D (1). The current yield of vitamin D is recorded around 20% (2), the reason for the low yield is the overirradiation of provitamin D resulting in alternative products, Lumisterol and Tachysterol (2). The conversion from provitamin D to tachysterol involves irradiation, leading to the formation of toxisterols (3). To increase the yield of vitamin D, the first step is generating the ideal supramolecular host Palladium nanocage (4), this compound will act as our host for the provitamin D while also being eco-friendly. To determine the best procedure to optimize the amount of vitamin D, measuring the amount of yield of each product in other solvents and seeing if our supramolecular host controls the selection process by minimizing the production of the two main by-products originating from provitamin D. The goal is to be able to synthesize and increase the efficiency of vitamin D from provitamin D while also making this reaction in a sustainable solvent.

SEM-EDS Analysis of Metal Oxide Powder Samples and Films

Saul Torres
Sponsor: Dr. Linda de la Garza

Iron(III) oxide, α -Fe₂O₃, also known as hematite, can have applications as semiconductor in photoelectrochemical cells. Fe₂O₃ nanoparticulate films could be an alternative material for solar cells and for photocatalysis. A sample of rust gathered from a junkyard (Madison, FL) was used as source for iron, and laboratory grade Fe₂O₃ was used to compare the material properties against the rust. Scanning electron microscopy coupled with energy dispersive X-ray spectroscopy (SEM-EDS) was used to analyze the structure and elemental composition of both the laboratory grade Fe₂O₃ sample and the rust sample. The lab grade Fe₂O₃ sample showed Fe and O as expected. The rust sample was confirmed to contain Fe and O, but it also showed Al, Si, C, Tb, and Ca. Preliminary SEM-EDS data on nanoparticulate films deposited on conductive indium tin oxide slides using Fe₂O₃ nanoparticles from lab grade source and recycled rust confirmed the similar elemental composition of the films and the presence of Fe and O. X-ray diffraction (XRD) analysis of the powder samples was carried out, but results were inconclusive, as results indicated both samples are amorphous, even after annealing treatment at 600°C. The annealing resulted in a mass loss in the recycled sample of 41.9%, probably due to combustion of organic material present in the sample.

Geosciences

Staurolite within the Dean Formation in the 7.5-minute Murphy Quadrangle, North Carolina

Shaelyn Mackenzie Kiley
Sponsor: Dr. Don Thieme

This thesis aims to identify and define the existence of new and pre-existing sites of staurolite within the Dean Formation at the northern half of Hiwassee Lake in the Murphy Quadrangle. Staurolite is particularly utilized as an index mineral that relates to medium to high-grade metamorphism; this is due to specific physical and chemical conditions relating to the growth of staurolite. Staurolite was previously described in two areas north of the lake and only one has been proven via modal analysis. Five stations of porphyroblast-bearing schists have been selected. Staurolite and related minerals will be identified and described through rock descriptions and modal analysis of thin sections. The goal of this study is to examine schists within the Dean Formation, in order to define mineralogy and local geology, to further define the metamorphic grade, and to re-define local past observations of the formation.

Factors that Facilitate the Displacement of the Gullah Geechee Community

Demetrius J. McQueen
Sponsor: Dr. Paul Vincent

The Gullah Geechee community is a unique African American ethnic group found in the islands and coastal regions of southeastern North Carolina, South Carolina, Georgia, and northeastern Florida. Due to the geography of where the Gullah Geechee community is situated, many socioeconomic and environmental pressures arise. While the community is attempting to cope with changes in environmental dynamics, there is also the threat of potential displacement. These factors include actions of coastal gentrification and the stresses of global climate change. Through using quantitative data and community narratives, a provoking story can be told that draws attention to the challenges the Gullah Geechee community faces today in their homelands while demonstrating cultural resilience.

Employer-Assisted Housing

**Alma V. Diaz, Charles S. Ellis, Diamond T. Jennings,
Mercedes L. McElroy, Demetrius J. McQueen and
Jahkaylah J. Rogers
Sponsor: Dr. Jia Lu**

Affordable housing is a pressing issue given the recent increase in rent and mortgage due to inflation. To promote workforce retention and business competitiveness, Employer-Assisted Housing (EAH) could be a possible solution because it provides direct financial assistance and education to the workforce. However, not enough studies have been done on the EAH planning process and its impact on American cities. Thus, it is our objective to study this topic. We designed questionnaires and interviewed planners and employers with knowledge of EAH to examine the planning and implementation process. Our analysis summarizes the advantages and disadvantages of EAH. Policy suggestions are proposed to Valdosta regarding EAH planning and implementation.

Analysis of Autonomous Vehicles in Public Transit

**Jacob Bruch, Meghan Schofield, Chris Le, Makayla Horner, Michael
Williams, Diamond Jennings and Jahkaylah Rogers
Sponsor: Dr. Jia Lu**

Autonomous vehicles (AVs) are a new phenomenon that promises to enhance transportation equity, accessibility, and safety. Many cities around the country have been testing AV in their public transit. The city of Valdosta is interested in applying this technology. However, not much has been studied about the AV planning process and its performance in real-world public transit. The objective of this project is to interview transit planners who have incorporated AVs in transit to understand the planning and implementation of AVs. We developed specialized interviews and studied AV applications in several cities. Our analysis reveals the success and challenges of AVs in public transit. Suggestions will be made to the Valdosta transit system along with specific strategies for implementation.

Effect of COVID-19 Policy Discrepancies in Long-term Care Facilities with High Concentrations of Minority

Alma V. Diaz
Sponsor: Dr. Jia Lu

The study aims to follow the exposure of COVID-19 in older populations living in New Jersey's long-term care facilities and comparatively analyze outbreaks in these facilities with high concentrations of minority populations, as a result of possible impact of state policies, quality of nursing homes, and minority population density. Long-term care facilities with high concentrations of minorities are more likely to provide poorer quality care to their residents. Long-term care facilities, which are not routinely equipped for emergency care, faced a tremendous amount of pressure as numbers of residents contracting COVID-19 rose. New Jersey policies routinely implemented and updated their long-term care facility guidelines according to CDC recommendations with alterations that may attributed to the rise of their coronavirus cases. In addition, long-term care facilities with high concentrations of minority were disproportionately affected. The result points to New Jersey state's policies contributing to higher COVID-19 outbreaks in long-term care facilities with high concentrations of minority.

Food Deserts in Georgia

Students: Diamond T. Jennings
Sponsor: Dr. Jia Lu

Food deserts are areas with a lack of access to affordable and fresh foods. This study will focus on the entire state of Georgia and highlight the areas around the state where food deserts exist and where potential food deserts are susceptible to appearing. This study will collect various data to explain the causes of food deserts around Georgia. Data collected will consist of local supermarket locations, fresh food prices, and the state of freshness of their foods. Another aspect of the research will incorporate the socioeconomic data of these areas and compare the household income to the average costs of fresh foods in their community to find out if there is any underlying basis as to why food deserts are occurring in these particular areas. Suggestions will be provided to improve access to fresh food in the food deserts.

Mapping Surface Geophysical Anomalies using Ground-penetrating Radar

Ramyia J. Hemphill
Sponsor: Dr. Thieme

We used ground-penetrating radar (GPR) to map subsurface geophysical anomalies in a gridded area of Sunset Hill Cemetery which we suspected to contain unmarked graves. A 500 MHz antenna was towed beneath a car along a total of fifty (50) parallel radargram transects spaced two (2) feet apart for an average distance of sixty (60) feet. The data are being processed to delineate probable grave shafts and other natural and artificial features responsible for anomalies identified within the grid.

Department of Computer Science and Engineering Technology

Computer Science

Social Media and its Effects on E-Commerce

Alec J. Martin
Sponsor: Dr. Chunlei Liu

In our modern age, social media and e-commerce go hand-in-hand. Good social media presence is nearly a requirement for companies to be successful. This research explores the relationship between these internet-based domains from its relatively modern introduction to its more vast, diverse, current form. As businesses become better at utilizing social media to its full potential, this study delves into the myriad of tools provided by this medium, including but not limited to, directed advertisement, company applications, and digital marketplaces. Examples of common, more successful social media actions show the pivotal role of platforms like Facebook and YouTube, as well as other advertising behemoths who have shown undeniable success in past endeavors. The research proves that these platforms are able to capitalize on things like user activity and information to target advertisements, in addition to studying patterns to enhance marketing effectiveness. The study also explores side applications, which are not social media platforms in the traditional sense, but use similar techniques to improve user experience and personalization.

Simulation of a Finite State Machine

Tyler Z. Young and Devam A. Patel
Sponsor: Dr. Ahana Roy Choudhury

Finite state machines (FSMs) are typically described as a theoretical model that helps represent the behavior of a system that has a finite number of states. It is made up of a set of states, transitions, and different inputs and outputs that are associated with each transition. One of the most prevalent examples of an FSM is a vending machine. During this experiential learning activity, we designed an FSM to simulate a vending machine using a state diagram and a state transition table. First, we observed a vending machine in Nevins Hall. Using these observations, we identified the number of states in the vending machine as well as the state transitions from each state corresponding to different inputs and the corresponding outputs. Furthermore, we simulated this FSM using an Arduino microcontroller and electronics components such as button switches and LEDs. The switches were used to represent different inputs to the vending machine and the LEDs corresponded to outputs such as dispensing a drink or returning change. An RGB LED was used to represent the current state. Besides, we identified other examples of FSMs in everyday life, studied about the shortcomings of FSMs and how a Turing machine overcomes that shortcoming.

Addiction by Design: Strategies in Modern Game Development

Chad Calhoun, Andrew Lind Tucker and Tyler Young
Sponsor: Dr. Sudip Chakraborty

Video game addiction is an established and growing concern worldwide among people of all ages, genders, or socio-economic backgrounds. With the availability of a full gamut of devices and platforms to play a video game, the gamer population is increasing constantly. Consequently, video game sales and profits are in sharp rise. To accelerate the profit, the game developers are constantly adding features that make the games more attractive, which is, in turn, fueling the already existing gaming addiction issue. In this research project, our group investigated the tactics employed by the developers in contemporary gaming to foster addiction. We explore three key issues: the fear-of-missing-out, the Skinner Box, and the influence of color on gaming attraction, along with their associated subtopics. We conducted a survey among VSU students to discern their gaming habits. Our results reveal that through these methodologies and patterns, game developers are successfully getting a portion of the gamers into addictive behaviors. This demographic tends to spend more and consistently contribute to driving profits for developers upwards. The survey results thereby validate our initial observations about the changing landscape of video gaming.

Simulating a Vending Machine using an Arduino

Kemi C. Godo

Sponsor: Dr. Ahana Roy Choudhury

This experiential learning project involved the implementation of an electronic circuit to simulate a vending machine, which is an example of a finite-state machine (FSM). In this project, we first conduct research on the history and theoretical principles of FSMs, including identifying the number of states required to solve a specific problem using an FSM and the inputs and outputs. Next, we study the vending machine in Nevins Hall and note the observations. Using the observations, we identify the number of states in the vending machine and draw the state transition table as well as the state diagram. We design and implement a circuit using an Arduino micro-controller, a breadboard, different colored LED lights and buttons to simulate part of the functionality of the vending machine. We accomplish this using C++ code such that when each button is pressed, one LED light changes color to signify change of state while the other LEDs blink to represent the dispensing of a drink, returning change, or showing insufficient balance. Besides, we researched real-life applications of FSMs as well as shortcomings of FSMs in comparison to computers.

Simulation of a Finite State Machine using a Micro-controller

Charles S. Ellis

Sponsor: Dr. Ahana Roy Choudhury

This poster presentation explores the functionality and design of a vending machine as an example of a finite state machine and highlights various real-life applications of finite state machines (FSMs). The poster discusses the history as well as the advantages and shortcomings of FSMs, which operate using a set of predetermined states.

The presentation provides an overview of a candy vending machine which contains candies of differing prices. First, we observed a drink vending machine in Nevins Hall and noted the details about the various outputs and messages that we get from the machine when we press different buttons or insert \$1 notes in the vending machine. Based on these observations, we identify the number of states that this vending machine has as well as the state transitions that take place based on the inputs at each state. We designed a modified version of this vending machine which dispenses candies of different prices using a state diagram and a state transition table. Finally, the designed FSM is implemented using an Arduino Uno microcontroller and electronics components such as a breadboard, button switches, and LEDs of various colors.

AVL Tree spellchecker

**Hayden R. Dunlap, Bryan Godinez Jimenez,
Jaehun Hong and Dhrumil Patel
Sponsor: Dr. Anurag Dasgupta**

This project explores the integration of an AVL Tree data structure in a spellchecker system to enhance word lookup and suggestion accuracy. By utilizing an AVL Tree, our spellchecker achieves logarithmic time complexity for operations, significantly improving efficiency. The self-balancing feature of the AVL Tree ensures optimal performance, which is crucial for maintaining responsiveness for a dynamic dictionary. Coupled with string similarity algorithms like Damerau-Levenshtein and Jaro-Winkler, the system not only detects misspellings with high accuracy but also provides relevant correction suggestions. Our work demonstrates the AVL Tree's impact on the spellchecker's speed and accuracy, offering a substantial improvement over more primitive methods. This study underscores the AVL Tree's efficiency with large datasets and provides an example of what can be built with this efficiency.

Engineering Technology

Verification of Center of Gravity Structures in Engineering Technology using Computational Methods and Milling Machine Experimentations

**Christian P. Strickland
Sponsor: Dr. Barry Hojjatie**

Finding the center of gravity of structures is vital in engineering because it ensures stability, improves designs, and boosts safety. By determining the center of gravity, engineers can tell if something will stay balanced, spread weight evenly to avoid strain, and save on materials. Overall, knowing the center helps engineers make better decisions for safer and more efficient structures and systems. Using a milling machine to verify center of gravity calculations for engineering structures of complex geometries involves practical testing. We secure the structure, take measurements, and gradually remove material based on calculations. After each step, we check the structure's position and compare it to our predictions. If there's a difference between the results obtained from computational methods and experiments, we adjust our approach until the results match what we expect. By documenting our process carefully, we ensure our calculations are correct, which improves the reliability of our engineering designs. We also verify calculations by integration of irregular shapes with those obtained using a 3-D printer. Comparing calculated shapes with 3-D prints confirms design accuracy and manufacturing quality, improving engineering practices.

Simulation of Mechanics Problems in Various Variables using ChatGPT and MATLAB

Wooseok Kwon

Sponsor: Dr. Barry Hojjatie

When solving engineering problems, we generally use various physical principles to come up with mathematical relations that are called closed-form solutions. However, for many problems in engineering because of their complex geometries and number of variables, closed-form solutions do not exist, and one has to apply computational methods using computer software to gain insight into the problems. The objectives of this study are to apply MATLAB computer software and its graphical and animation capabilities to solve and simulate selected problems in mechanics. We will focus on maximizing the usability of MATLAB by applying ChatGPT (a popular software based on AI). Additionally, our goal is to visualize physical phenomena as animated graphs and convey them to people.

Department of Applied Physics and Mathematics

Applied Mathematics

A Machine Learning Analysis on the Unemployment Rates in the U.S.

Callie N. Reid

Sponsor: Dr. Velez-Marulanda

We use supervised tools from Machine Learning such as linear regression and decision trees to data obtained from the U.S. Bureau of Labor Statistics concerning unemployment rates to predict covered employment in the states in the United States. We use the statistical computing software R to obtain our conclusions. We are also interested in comparing our results with those previously obtained by using tools from topological data analysis on the same data set.

From the Law of the Lever to Calculus and Beyond

Miguel Riano Guevara
Sponsor: Dr. Charles Kicey

The simple and seemingly innocent Archimedes, “Law of the Lever” is in fact a rich contributor to the mathematical sciences. Starting with the most basic form that will lead to advanced ideas in Calculus, Physics, Probability, and perhaps elsewhere. We intend to begin with this basic calculus form and investigate its possibilities in applied topics like Physics, Engineering, and Probability. By using the Law of the Lever, we will determine the center of mass within irregular shaped objects. Archimedes’ Law of the lever provides a simple effective method for locating the center of mass in objects of various shapes. This research contributes to a deeper understanding of fundamental principles in mechanics and offers practical applications in different contexts.

Predicting the MSRP of a Dirt Bike

Alexander S. Jaramillo
Sponsor: Dr. Andreas Lazari

A mathematical model for the Manufacturer’s Suggested Retail Price of a dirt bike is presented. Many variables contribute to the MSRP of a dirt bike including, bore, clearance, displacement, and wheelbase. In this study, a Linear Model is proposed, to predict the MSRP of these variables. The correlation matrix shows that the variables are reasonably correlated to the MSRP. I used a Multiple Linear Regression to analyze the data and predict the MSRP.

Aspect Analysis: An In-Depth Look at the Interrelation of Musi-Related Variables

Tristin Sahagun
Sponsor: Dr. Andreas Lazari

Given the averages of certain aspects of music over the last 70 years, I want to use a linear model to predict the danceability and loudness using variables that describe the acousticness, duration, energy, instrumentalness, and speechiness. I want to show that both danceability and loudness can be relatively predicted based on these variables. The correlation matrix shows that the variables are reasonably correlated to the danceability and loudness.

Predicting Corpus Collasum Surface Area

Timothy M. Smith
Sponsor: Dr. Andreas Lazari

Studies show that the Corpus callosum surface area (in cm^2) (CCSA) is directly related to the Total Brain volume (in cm^3) (TBV) and the Head Circumference (in cm) (HC). In this study, a mathematical linear model, is proposed that allows the prediction of the CCSA using TBV and HC. Data was taken from a study in which measurements were obtained from pairs of identical twins using magnetic resonance imaging and other methods. The correlation matrix shows that the variables are reasonably correlated to the CCSA. I used a Multiple Linear Regression model to predict the Corpus callosum surface area (in cm^2).

Mathematical Model for Death 30 Days after a Heart Transplant

Yasmene T. Williams
Sponsor: Dr. Andreas Lazari

A heart transplant is a complex and risky procedure. In this study, I study the patient deaths that occur in U.S. heart transplant hospitals within 30 days following surgery. It's crucial to be aware of the chance of passing away 30 days following a transplant before undergoing the procedure. In this study, a Linear Model is proposed, to predict the number of deaths within 30 days. The correlation matrix shows that the variables are reasonably correlated to the number of deaths within 30 days. I used a Multiple Linear Regression to analyze the data and predict the number of deaths within 30 days.

Applied Physics

Exploring Surface Temperature Dynamics and Habitability Potential: Insights from a Daisy World Model on Kepler-62f

Jasmine Freeman, Ian Mclean and Jordan Hewins
Sponsor: Dr. Billy Quarles

The concept of planetary habitability traditionally centers around the presence of an Earth-sized planet situated within the habitable zone, where conditions permit the existence of liquid water on the surface. However, the potential for life on a planet's surface extends beyond this criterion and hinges on the availability and distribution of sunlight reaching the surface. To delve into this aspect, we delve into an examination of Kepler-62f using a simplified model known as Daisy World. This model intertwines the physical characteristics of two theoretical species of daisies with surface temperature. Our investigation involves simulated surface temperature variations across latitudinal bands, derived from a one-dimensional energy balance climate model that assumes a tilt similar to Earth's. Our findings reveal a seasonal influence on daisy populations, with darker-hued daisies predominating at higher latitudes. Considering that extremophiles—organisms thriving in extreme conditions—might represent the earliest forms of life on Earth, our study, incorporating temperature-sensitive daisies, serves as a crucial step toward broader inquiries into potential life beyond our Solar System

Exploring Uncharted Realms: Discovering Exoplanets via Transit Analysis with TESS

Jasmine Freeman
Sponsor: Dr. Douglas Caldwell

In the realm of exoplanetary research, the Transiting Exoplanet Survey Satellite (TESS) has become a trailblazing space-based observatory. In this investigation, we concentrate on TESS's studies of Sectors 56, 57, 58, and 59, which have enhanced our knowledge of the exoplanet population and the larger cosmos. We examine the light curves collected from these sectors using TESS's high-precision photometry to recognize and describe exoplanetary systems. TESS uses the transit technique, which allows for the identification of exoplanets as they pass in front of their host stars and temporarily dim those stars' brightness. We can deduce the existence of exoplanets and determine crucial factors like size, orbital period, and distance from the host star by examining the frequency and characteristics of these transits. Sectors 56, 57, 58, and 59 have a wide variety of exoplanetary systems, according to our findings. These findings range from hot Jupiters to super-Earths and even Earth-sized planets that are located in the habitable zone of their host star. Additionally, we discover a number of multi-planet systems, illuminating the intricate dynamics of exoplanetary architectures. Acknowledgment: Matthew Tiscareno, SETI Institute; Faculty of the Department of Applied Math and Physics, Valdosta State University.

Exploring Kepler 62f's Climate Dynamics through an Energy Balance Model

Ian McLean

Sponsor: Dr. Billy Quarles

Energy balance models evaluate thermal diffusion within the atmosphere of an Earthlike planet and thus are useful for evaluating the potential climates of planets within the habitable zone of their host star. The habitable zone simply marks the orbital distances where the radiative flux from the host star could plausibly be sufficient to allow for water on the surface of a terrestrial planet. We use a 1D energy balance model, an open-source Python package called ClimLab, to evaluate how changes in the spin of Kepler-62f affect its potential climate. The axial tilt of Kepler-62f is perturbed by its neighboring planets, which can cause variations in the seasonal production of ice on its surface. The climate of Kepler-62f can be modified through a feedback from the changes in the planet's reflectivity, which is similar to Earth's Milankovitch cycles, or periods of glacial advance and retreat. Our results show that the extent of ice coverage on Kepler-62f does not vary greatly because the axial tilt remains stable. Modeling the potential climates of exoplanets, like Kepler-62f, using energy balance models can be helpful to better target other possible reservoirs for life in our Galaxy.

Modeling the Orbital Dynamics of Super Earth Kepler-62f

Jordan Hewins, Ian McLean and Jasmine Freeman

Sponsor: Dr. Billy Quarles

The first planetary disk was observed by the Las Campanas Observatory in 1984 around the star Beta Pictoris. Multiple exoplanet discovery initiatives such as Kepler and K2 have observed thousands of worlds beyond our star system since then. Some of these exoplanets are on the shortlist for habitability by possibly having water on their surfaces. Kepler-62f is one such planet whose orbit is within the habitable zone of its host star. We employed software packages such as Rebound and TTVFast to compare generated orbital parameters with observations and model those conducive to a stable Kepler-62 system. We also analyze the interplay of Kepler-62f's orbit and the orbit of other bodies in the system. This work also considers the effect these modeled solutions have on broader questions surrounding exoplanet habitability by investigating the relationship between orbital dynamics and climate influences. Understanding the orbital dynamics of exoplanets and their influence on climate can form a complete understanding of these star systems and the conditions which may support life on other planets.

Trojan Planet Packing within the Habitable Zone of Alpha Centauri

Hector R. Prieto
Sponsor: Dr. Quarles

The Kepler Mission uncovered a multitude of exoplanet candidates, where astronomers identified two new classes of planet not found in our Solar System (e.g., Super-Earths and Mini-Neptunes). Some researchers proposed that Kepler could also discover planetary systems with Trojan planets, where two planets orbit the star at the same semimajor axis but separated by 60 degrees in orbital phase. The method of transit timing variations was responsible for two new classes, but the detection of a pair of Trojan planets remained elusive. We are motivated to investigate the possibility of Trojan planets in Alpha Centauri AB, given the tentative detection of a Trojan planet in PDS 70 using observations from ALMA (Balsalobre-Ruza et al. 2023). We simulate Trojan planets orbiting Alpha Cen A using the n-body simulation code rebound, which allows us to evaluate the stability of Trojan systems under the strong perturbation of a stellar companion (Alpha Cen B). We find that a pair of Trojan planets can orbit Alpha Cen A for ~50 kyr without significant changes in the planetary semimajor axes, which indicates that long-term stability is possible despite perturbations from the stellar companion. Our preliminary result suggests that Trojan planets in binaries are possible, which may double the prospects for habitable planets if such worlds are Earth-like.

College of Honors

Exploring Hidden Talent: Identifying and Supporting Hard of Hearing People's Talent Development

Jenna, N. Herren
Sponsor: Dr. Ophelie Desmet

A substantial number of children (ages 5-17) in the United States are deaf or hard of hearing yet 75% of these students attend general education without Individualized Education Plans (IEPs, NAD, 2020). As such a majority of hard of hearing children's needs are not being met as they should be, thus hindering their academic successes. Children who live with deafness and are hard of hearing often face obstacles that can hinder their emotional and physical ability to perform well in school. This is often seen as a deficit rather than an intellectual strength (Paterson, 1998). Talent development as well as developing support systems for the hard of hearing is an under studied topic. Therefore, I conducted a case study focused on a retrospective exploration of the talent development among hard of hearing people. Through a series of interviews, I investigated what helped and hindered these individuals as they grew up in the education system. I also reviewed multiple pieces of literature to further extend the research and analysis on talent development as well as support systems for the hard of hearing. By exploring the talent within these individuals and ways to build a structured support system, the affected students, peers, parents, teachers and education system as a whole can better support them in guiding them through a general education classroom.

Does Social Media impact Generational Differences in Knowledge of the Affordable Healthcare Act between Students and Professors at Valdosta State University?

Jaclyn R. Talbert and Collin Tomeny
Sponsors: Dr. Michael Savoie and Dr. A.J. Ramirez

The project strives to understand if knowledge contributes toward generational differences-how individuals benefit from the Affordable Healthcare Act (ACA). The population observed is between students and professors at Valdosta State University. The first research question is: How much do students know about their healthcare benefits? Furthermore, if students are knowledgeable of their healthcare, can it be assumed they are knowledgeable of the Affordable Healthcare Act. The second research question is: Does social media have a negative effect on student's knowledge of the Affordable Healthcare Act? The methodology, will survey some members and affiliates of the VSU campus. In this survey, we will be asking generalized questions regarding the Affordable Healthcare Act to see how knowledgeable students and professors are on the policy and the health benefits they are receiving. Following the results, it is expected that Generation z will know less about the Healthcare Act than past generations, such as Generation x and Millennials. Furthermore, it is specifically predicted that the use of social media for news and information on the Affordable Healthcare Act will show to be much less accurate. There are multiple sides to social media, and because social media is not a scholarly database, it may affect the way people view different topics. Further research will be conducted to find ways students can be educated on policies such as the Affordable Healthcare Act.

Linguistic Transfer: Application in an American Sign Language Cohort

Addeline S. Wright
Sponsor: Dr. Jennifer Beal

Cummins (Year pub) proposed a theory in the 1970s suggesting learners (what learners?) can transfer knowledge, skills, and abilities from their first language (L1) to their second language, (L2), which may allow previous linguistic experiences to impact future abilities. However, these abilities are not often transferred between languages with a different modality, such as English and American Sign Language (ASL). The effects of previous linguistic experiences were measured by surveying a cohort of ASL III students at Valdosta State University. Participants were surveyed via Google Forms to determine how skills from their L1 might transfer to learning ASL as an L2. Resulting data were analyzed via correlations and showed that the cohort demonstrated some negative linguistic transfer that occurred between the students' L1 and L2. Data showed that the majority of participants learned English as their L1 and ASL as their L2, and while all participants reported their overall skill and ability in English to be fluent, previous linguistic experience was found to negatively transfer to current ASL usage and learning.

College of Nursing and Health Sciences

Nursing

Factors that affect Maternal Mortality in African American Women

Aniya J. Morris

Sponsor: Dr. Lois Ann Bellflowers

Maternal mortality among African American women is still a relevant issue in the United States. Various factors intertwine to cause disparities in overall healthcare quality and care. This study aims to identify, through a review of literature articles, factors associated with maternal care and how these factors contribute to maternal mortality. Investigation into these factors could provide opportunities to create improved patient outcomes, especially in the case of African American women, where the mortality rate is significantly high. The analysis of peer-reviewed articles gives a detailed insight into the underlying factors. Although efforts have been made to address these disparities, there is still a steady increase in maternal deaths among African American women. Awareness of these factors and further investigation could provide opportunities to aid in the prevention of maternal death in African-American women.

Correlations Between Anthropometric Measures and Visceral Adipose Tissue in Reserve Officers' Training Corps Cadets

Madeleine R. Mayer

Sponsor: Dr. Mark Kasper

Background: Visceral adipose tissue (VAT), a cardiometabolic risk factor, is highly correlated with waist circumference (WC). Some studies suggest that the waist to height ratio (WtHR) is superior to WC, body mass index (BMI) and percent body fat (%Fat) in predicting VAT. Purpose: To examine the relationships between WC, WtHR, BMI, and %Fat versus VAT area (cm²). Methods: A sample of ROTC cadets underwent anthropometric testing. Dual Energy X-Ray Absorptiometry (DXA) estimated VAT and %Fat. Statistics: Pearson correlations. Fisher's r to z transformation to determine if differences existed between r-values. Significance set at $p < 0.05$. Results: Significant correlations between VAT and WC*, WtHR*, and BMI* in the entire sample and in males, while only WC* and %Fat* were significantly correlated with VAT in females. The r-values were similar ($p > 0.05$) within each population but for %Fat#. Conclusions: WtHR was not superior to WC in predicting VAT, suggesting that WC is an acceptable proxy for estimating VAT in ROTC cadets. Caution is warranted due to a small and volunteer sample.