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Across the Disciplines*



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Carolyn Guzski, Ph.D.

Interim Director

Office of Undergraduate Research

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## Welcome to the 22<sup>nd</sup> Annual Student Research and Creativity Conference!

Welcome to the Buffalo State College Student Research and Creativity Conference e-Program. As we find more creative ways to stay connected during these tough times, our commitment remains to offer many ways to enrich the learning experience and to deepen students' disciplinary and cross-disciplinary knowledge. Undergraduate research is one such high-impact practice and participating in undergraduate research has many rewards. Students and faculty have been challenged in recent times to find ways to demonstrate their dedication and willingness to go the extra mile to develop research projects and to see them to their conclusion. This dedication gives students an advantage during the academic journey and continues to lay a strong foundation for graduate work, career aspirations, and making important differences in the world.



The Student Research and Creativity conferences in the past have showcased some of the many students that engage in significant research and creative projects here at Buffalo State. This online edition will be no different. The student work you will see represents the research efforts of some of the best and brightest talent at Buffalo State College. Our student researchers have worked diligently with their faculty mentors to undertake research projects from all academic disciplines and in a variety of venues and formats. It is through this research that we will continue to acquire new knowledge and discover new approaches to problem solving. Studies have shown that research enhances what students learn in the classroom; engages their intellectual curiosity; satisfies their thirst for discovery; and provides an outlet for their creativity and enhances future opportunities. We know that many of our students also gain self-confidence and grow intellectually by engaging in research and creative activities.

I congratulate and commend the remarkable students who are participating in this year's e-conference and I thank the faculty who have inspired them to this level of accomplishment. Kudos to everyone for making this happen even during these challenging times. Be well and stay safe!

Katherine Conway-Turner, Ph.D.  
*President*

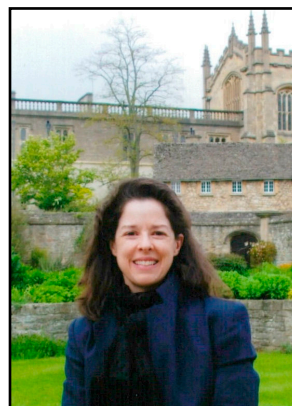


Welcome to the 22nd annual Buffalo State Student Research and Creativity Conference (SRCC). Buffalo State is nationally recognized for the extent and quality of its undergraduate research and creative scholarship program. Undergraduates engage in a variety of research experiences across schools, disciplines and academic settings. Experience-based learning that complements classroom learning allows students to develop mentoring relationships with faculty, gain critical skills, clarify life goals, and strengthen career aspirations. Active participation in research, scholarship, and creative endeavors strengthens a sense of belonging to the College and provides an intellectual and social community for undergraduates. This conference is designed to spotlight the quality and importance of student-faculty collaborative research at Buffalo State. Each year hundreds of students representing every discipline on campus gather to share their research and creativity with our community. The SRCC could not happen without the hard work of the students, faculty, and staff who have devoted their time and talents to this event. Congratulations, and thank you for your dedication.

James Mayrose, Ph.D.  
*Provost and Vice President of Academic Affairs*

## Welcome, everyone!

Welcome to all of the students, faculty, administration, staff, family, and friends that contribute to this festive tradition and showcase of talent that culminates our spring semester each year at Buffalo State. The 22nd annual Student Research and Creativity Conference marks its first appearance on a digital platform and, like most debuts, was filled with the excitement and theatrical sense of drama that attend such events. Amidst the ongoing concern surrounding the pandemic that has overtaken our daily lives, I am delighted to see our students continue to thrive on the challenge and joy of discovery, guided by trusted mentors who have initiated them on aspirational journeys filled with promise.



I want to thank both Dr. Jill K. Singer, Distinguished Teaching Professor of Earth Sciences and Science Education, and Interim Dean M. Scott Goodman of the School of Natural and Social Sciences, for creating and contributing to the solid foundation that was responsible for the robust participation our first Digital SRCC has enjoyed among student presenters and their faculty mentors. The rich array of research and creative endeavors that you will be able to dip into--repeatedly, I hope, given our asynchronous format--simply would not have been possible without their leadership in developing the array of programs that have become essential to Buffalo State's academic web of support in all disciplines on our campus and beyond.

A final word of appreciation on the Bengal spirit so generously shared by the artistry of Kaylene Waite in Creative Services and the Digital Commons wizardry of scholar Hope Dunbar. Much midnight oil was burned by all, and Digital SRCC 2020 could not have launched without them!

Carolyn Guzski, Ph.D.

*Associate Professor of Music*

*Interim Director, Office of Undergraduate Research*

# Welcome!



The annual Research and Creativity Conference is one of the highlights of the academic year at SUNY Buffalo State. It provides our undergraduate and graduate students the opportunity to showcase their scholarly and creative accomplishments. The work displayed at the conference attests to our faculty's commitment to mentoring and our students' commitment to engaged learning. As research and scholarship are critical parts of the graduate education experience, the Graduate School is honored to support this work. Congratulations to all those contributing to this inspiring event!

Kevin J. Miller, Ed.D.  
*Dean, The Graduate School*



On behalf of the School of The Professions, I would like to welcome students, faculty, staff, and friends of Buffalo State to the 22nd annual (and first virtual) Student Research and Creativity Conference! This wonderful event highlights the outstanding work done across our many different academic programs, and we are extremely proud of the research you have done this year. I am delighted that even with the disruptions caused by the coronavirus, our students and their mentors persevered to complete their research projects! Those we honor today truly embody Buffalo State's mission to empower a diverse population of students to succeed in a challenging world through our ideas, our innovations, and our engagement. Congratulations to all the students participating in this inspiring virtual event, and I sincerely thank all the faculty mentors for their contributions to student achievement.

Rita M. Zientek, Ph.D.  
*Interim Dean, School of The Professions*

When I arrived at Buffalo State, I was amazed at the celebration of research and creativity on campus. The annual Student Research and Creativity Conference is a crowning event of the academic year. The beauty of this event is that it recognizes student scholarship in many different forms. The Research and Creativity celebration is accessible, inclusive, and a wonderful representation of the diverse student interests on campus. The participants in this year's event have earned a round of thunderous applause and the highest admiration. They, amidst the difficulty of the pandemic and in spite of many challenges, have continued their path of investigation. They have persevered ... they have maintained ... they have achieved. On behalf of the School of Arts and Humanities, I offer congratulations to all the student scholars and their mentors. You are the heart and soul of this event and one of our many shining jewels of Buffalo State.

Carlos R. A. Jones, MFA  
*Interim Dean, School of Arts and Humanities*





I often describe the profession of teaching as a science, a craft, and an art, as it requires the teacher to master all three. This year, we have unfortunately added to that list, “skill in teaching and assessing learners through alternative delivery systems.” Over the course of the COVID-19 crisis at the end of this academic year, we have been delighted to learn in new and creative ways just how resourceful teachers can be! This event celebrates the amazing intersection between teaching and learning and the unfathomable value of the relationship between teacher and learner. Regardless of the mode of instructional delivery, teachers and teacher candidates continue to add to the science that requires them to ask more questions than to offer answers, to use their intellect and professional acumen to solve problems never before encountered, and to create new knowledge that grows from curiosity and inquiry. As you share with your colleague students the excitement of this pursuit, you are practicing the craft of intellectual playfulness and collaborative thinking. This year more than ever, it is in the art of teaching that we are seeing miraculous results. We marvel at the unique vision, original thought, and creative manipulation of both the real and the fantastic that we have seen demonstrated daily by teachers and teacher candidates. The world now knows more than ever before that teachers really are the scientists, the master craftsmen and the artists that make learning work even when physical schools are closed. In today’s demonstrations, take time to marvel at this phenomenon. Congratulations to student presenters and faculty mentors!

Wendy A. Paterson, Ph.D.  
*Dean, School of Education*

I am very happy to offer my congratulations to all the students and faculty mentors who have submitted their work to the 22nd annual Student Research and Creativity Conference. I invite family, guests, and the entire Buffalo State community to participate on-line in this premier Buffalo State event. I can’t begin to describe how proud I am of the hard work being conducted by students and faculty during this exceptionally difficult time. Student engagement with faculty in research and creative projects is one of our highest priorities at Buffalo State, and the broad participation across all disciplines, and inclusive of undergraduate as well as graduate students, shows our commitment to this. I look forward to looking through the numerous presentations and learning about the outstanding work conducted by Buffalo State students during the 2019-2020 year.

M. Scott Goodman, Ph.D.  
*Interim Dean, School of Natural and Social Sciences*









# Recipients of Undergraduate Summer Research Fellowships in 2019

## **Rakia Akter**, Childhood Education

Faculty Mentor: Professor Pixita del Prado Hill, School of Education

### **Tools to Foster Resilience for Burmese Students**

Rakia is a senior in Childhood Education expecting to graduate in spring 2020. She is passionate about developing trauma-informed practices and building resiliency amongst elementary-level students. After graduation, she will continue to pursue a Master's degree in the TESOL program at SUNY Buffalo State. She hopes that her education and background will serve as an advantage in helping students in the Buffalo Public School system.

During her fellowship, Rakia studied the Burmese immigrant experience in Buffalo and developed a toolkit of resources to address the specific trauma that children from this group have experienced. Rakia's research topic was inspired by a summer service-learning program in Myanmar and her neighborhood in Buffalo, which includes a growing number of Burmese refugees. Her project was accepted for presentation at the 2020 SUNY Undergraduate Research Conference, and she has presented for the School of Education at various Professional Development Schools (PDS) events, including the NAPDS-National Association for Professional Development Schools annual conference in Atlantic City in February 2020.



## **Adrianna Aviles**, Writing & Business Administration

Faculty Mentor: Professor Michele Ninacs, English

### **Cultural Rhetorics within the Field of Composition**

Adrianna is a senior pursuing a dual-degree: a Bachelor of Arts in Writing, a Bachelor of Science in Business Administration with a concentration in Marketing, and a minor in Literary Studies. After graduating in spring 2020, she will enter the M.A. program in Critical Studies in Literacy and Pedagogy at Michigan State University with an Academic Achievement Graduate Assistantships (AAGA) fellowship, which is awarded by MSU to 75 Masters or Ph.D. candidates throughout the institution. She plans to continue her studies in a Ph.D. program.

During her fellowship, Adrianna explored cultural rhetorics and its connection with language. As someone who has loved writing but not in the creative form, Adrianna was introduced to the field of Composition and Rhetorics by her advisor. As a Latina, she is aware that Standard American English practices can be both implicitly and explicitly racist and by extension can disenfranchise minority communities. Her study examined the role of cultural rhetorics and its association with writing pedagogy, by analyzing the responses of scholars in the field to a series of questions that asked them to consider the position of cultural rhetorics in relation to composition studies and pedagogies.



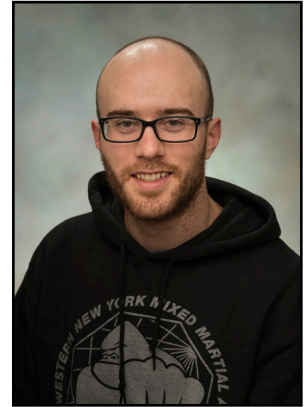
## **Nicholas Boyer**, Philosophy & English

Faculty Mentor: Professor Lorna Perez, English

### **Confronting the Sins of Our Fathers: Black Women's Speculative Fiction**

Nicholas is a double-major in Philosophy and English who expects to graduate in spring 2020. After six years of active duty in the USAF, Nicholas left military service in order to seek a more peaceful way of serving the world and those who occupy it, by decreasing violence and the oppression of Others. He will continue on to graduate school with plans of seeking his Ph.D.

As a fan of sci-fi and fantasy novels, Nicholas spent his fellowship researching Black Speculative Fiction. His work examines Octavia Butler's *Kindred* alongside Nalo Hopkinson's *Brown Girl in the Ring*. While *Kindred* uses devices of time travel to reveal the ways that the past always intrudes upon the present, *Brown Girl in the Ring* is set in a dystopic near future, in an urban Toronto devastated by poverty, white flight, addiction, and violence. In the midst of this, the characters use the powers of the spirituality, rooted in African diasporic experiences, to resist and survive in an urban wasteland. In both, young black female protagonists are forced to confront, literally and figuratively, the violence of their forefathers, and conquer them in order to ensure their own survival. Nicholas's research examines these battles with the past, and with the patriarchal figures in the novel, using thinkers like Franz Fanon, Toni Morrison, Ytasha L. Womack, Reynaldo Anderson and Charles E. Jones, and André M. Carrington, among others.



## **Jennifer Briones**, International Relations

Faculty Mentor: Professor Kyeonghi Baek, Political Science

### **The Loot of the Land: Mapping Out the Relationship Between Natural Resources and Sexual Violence**

Jennifer is a senior in International Relations expecting to graduate in spring 2020. Throughout her time at Buffalo State, has maintained an interest in researching sexual violence in international conflict. Jennifer recognizes faculty mentors Dr. Kyeonghi Baek and Dr. Mehwish Sarwari as inspirations throughout her undergraduate career, and intends to pursue a Ph.D. in Political Science at Michigan State University in the hope of inspiring future undergraduate students herself.

During the fellowship, Jennifer also researched natural resource presence and its impact on impacted sexual violence throughout conflict. She delved into the field of Africana Studies by incorporating natural resources as a potential causal mechanism of conflict in Africa, using the Democratic Republic of Congo as a case study. Jennifer presented on a panel at the 44th annual National Council for Black Studies (NCBS) conference in Atlanta, and was accepted to present at the 2020 International Studies Association (ISA) annual conference in Honolulu.





### **Carleigh Cimmerer**, Forensic Chemistry

Faculty Mentor: Professor Jinseok Heo, Chemistry

#### **The Effect of Capping Ligands on the Freezing-Induced Aggregation of Gold Nanoparticles (AuNPs) for Near-IR SERS Substrates**

Carleigh is a senior in Forensic Chemistry expecting to graduate in spring 2020. She has been interested in applying spectroscopic methods for chemical analysis. Carleigh has been recently accepted to the MS program in Forensic Science at Buffalo State College. After having finished her Master's degree, she plans to work as a lab scientist in a forensic laboratory.

Through her summer research, Carleigh found that the molecular size of capping agents played a critical role in the freezing-induced aggregation of gold nanoparticles (AuNPs). This result will not only help understand the mechanism of the formation of AuNP clusters by the freezing method but also design surface-enhanced Raman scattering (SERS) substrates that work optimally in the near-IR region. Her research was accepted for presentation at the 2020 Undergraduate Symposium of the American Chemical Society-Western New York Section.



### **Kristin Czajka**, Biopsychology

Faculty Mentor: Professor Naomi McKay, Psychology

#### **Salivary Alpha Amylase as a Biomarker for Stress Reactivity**

Kristin is a senior Biopsychology major and Biology minor who will be graduating in spring 2020. She was a departmental senior awards finalist and is expecting to graduate with high honors. She is interested in the study of brain pathology. After graduation, she plans to pursue a Ph.D. in neuroscience and to focus her post-doctoral research on neurodegenerative diseases.

During her fellowship, Kristin found that salivary alpha amylase was an effective biomarker in place of salivary cortisol in cohorts that display a blunted cortisol response to stress. Furthermore, she found that body mass index (BMI) had an impact on salivary alpha amylase levels and that those that were overweight/obese did not physiologically respond to stress in the same manner as normal weight individuals. Her research has been submitted to the Journal of Psychoneuroendocrinology for publication in April 2020.



### **Michael Grey**, Physics

Faculty Mentor: Professor Ram Rai, Physics

#### **Studies of Mn<sub>4</sub>Ta<sub>2</sub>O<sub>9</sub> Thin Films Deposited by Magnetron Sputtering**

Michael is a junior in physics and is expecting to graduate in the Spring of 2021. After graduation, he plans to pursue a graduate degree in physics or applied physics. This summer, Michael will be applying for an internship at CERN in Switzerland. Following completion of his graduate degree, he hopes to either work for NASA or at CERN with their Large Hadron Collider, which holds his interest.

During his fellowship, Michael synthesized Mn<sub>4</sub>Ta<sub>2</sub>O<sub>9</sub> and deposited thin films from the synthesized compound. These thin films were found to have an antiferromagnetic transition temperature at approximately 137 K, which is higher than the expected temperature of approximately 102 K. Due to only containing ~40% Mn<sub>4</sub>Ta<sub>2</sub>O<sub>9</sub> within the compound, it is possible that either the multiple phases affected the transition temperature or the strain effect in the thin film. Michael also synthesized a 99% pure Mn<sub>4</sub>Nb<sub>2</sub>O<sub>9</sub> compound. Future research will focus on improving the synthesis process to achieve ~99% purity of Mn<sub>4</sub>Ta<sub>2</sub>O<sub>9</sub>.



### **Haley Hughes**, Exceptional Education

Faculty Mentor: Professor Dr. Shannon Budin, Exceptional Education

#### **Exploring the Potential Stigma Attached to Learning Disabilities**

Haley is a junior in Exceptional Education who expects to graduate in 2022. She has had an interest in working with students with learning disabilities and associated research. Following graduation, Haley aspires to become a Special Education teacher.

During her fellowship, Haley found research supporting assertions that there is a stigma attached to learning disabilities (LD). Several themes and common issues faced by these students emerged from the study. In many, but not all, cases there were negative social outcomes for students as a result. Haley presented for the School of Education at the annual Professional Development Schools (PDS) Consortium in the fall of 2019 and has completed a comprehensive literature review from her research fellowship findings. A second phase of Haley's research is now in process, where students with LD and their teachers will share their personal experiences and perceptions related to the issues identified in the review of literature.



### **Katherine Jastrzab**, Dietetics

Faculty Mentor: Professor Tina Colaizzo-Anas, Dietitian Education Program

#### **Nutrition Education Study for Cancer Survivors**

Katherine is a senior in the Dietitian Education Program expecting to graduate this spring. She is interested in cancer prevention, oncology nutrition, and diet education for cancer survivors. After graduation, she plans to pursue a career in oncology dietetics and a Master's degree in Public Health.

During her fellowship, Katherine provided educational grocery store tours to cancer survivors with the goal of increasing their adherence to the American Institute for Cancer Research's (AICR) recommendations for survivors. The participants' dietary intakes were measured before and one month after the grocery store tour. Participants were shown to have intakes of increased fruit/fruit juice, decreased saturated fat, and decreased added sugar following the tour, dietary changes associated with a closer adherence to the AICR's recommendations. Katherine plans to continue researching the relationship between nutrition and cancer survivorship.



### **Kenneth Kelly**, English

Faculty Mentor: Professor Macy Todd, English

#### **Furthering a Distinctive Definition for Afrocentricity and Pan-Afro Thought**

Kenneth is a senior majoring in English and expecting to graduate in the spring of 2020. His focus has primarily been in studies of Caribbean Literature, Afrocentric Thought, and African rooted folk tales. Upon completion of his Bachelor's degree, he will pursue a Master's degree at the University of Chicago and intends to complete his academic career with a Ph.D. in English.

During his research, Ken found clear parallels between southern African American, Bahamian, and Yoruban folktales. These indicate social and cultural connectors that further unify Afrocentric thinkers, those who subscribe to Pan-Afro thought, and Black individuals whose cultural and ethnic heritage are rooted in African tradition. Through studying folklorist and nineteenth-century poets, Kenneth found specific methods within their records and poems that highlight oppressive Eurocentric literary functions. His research revealed how concepts of Pan-Afro thought can be utilized within varying Eurocentric institutions to give agency and provide unity amongst Black individuals and underrepresented peoples who exist within them. He intends to propose his work for publication.



### **Kayla Kopinski**, Geology

Faculty Mentor: Professor Gary Solar, Earth Sciences

#### **Microstructural Documentation of Metamorphic Rocks from Coastal Maine**

Kayla is a senior Geology major who will be graduating in spring 2020. She plans to attend graduate school in Geology.

During her fellowship, Kayla documented the metamorphic-deformation combination recorded in rocks that were at the edge of ancient North America approximately 300 million years ago, but now exposed in coastal Maine. Kayla documented the microstructures in the rocks where older mineral patterns are preserved inside larger crystals. The older patterns do not match the geometry of the bulk rock patterns, thereby signifying an earlier continental collision whose mineral patterns were replaced by new mineral growth during a later collision (about 100 million years later). Kayla was selected to present these results at the Geological Society of America Combined Northeastern and Southeastern Regional annual meeting in Reston, Virginia in March 2020.



### **Julianna Kraft**, Hospitality and Tourism

Faculty Mentor: Professor Chenchen Huang, Business

#### **Sense and Sustainability- Current Data and Future Trends in ACPHA Accredited Hospitality Programs**

Julianna is a junior in Hotel Tourism Management expecting to graduate in spring 2021. She has been interested in sustainability and environmental stewardship in the hospitality industry for many years. After graduation, Julianna hopes to complete a Fulbright Scholarship in South Korea and to pursue working internationally in the tourism industry.

During her fellowship, Julianna discovered that sustainability is a growing movement within the hospitality curriculum and that a holistic incorporation is the most prevalent approach. After collecting course information from 66 accredited programs, she created a scorecard that compared Buffalo State's program to that of 13 peer institutions. She discovered that while Buffalo State scored low on a visible sustainable curriculum, she found it could compete with its initiatives among individual faculty inside and outside the classroom.





### **Kayla Lackie**, Fashion and Textile Technology

Faculty Mentor: Professor Arlesa Shephard, Fashion and Textile Technology

#### **Historic Prints as Design Inspiration: Practice-Led Research**

Kayla is a senior majoring in Textile Design and expects to graduate in Spring 2020. She is interested in historic textiles as inspiration for contemporary designs and has developed a collection of textile designs as a result of this project. After graduation, she plans to work as a textile designer for an established company, specializing in either swimwear or interior fabric design.

During her fellowship, Kayla applied practice-led methodology to research and create textile designs. Kayla and her mentor, Dr. Shephard, conducted research at several archives through the Western New York and New England areas. The research was documented and analyzed following each museum visit and design session. Kayla has developed a portfolio of textile designs based on these inspirations. This research was accepted for presentation at the annual symposium of the Costume Society of America, a professional organization dedicated to the study of dress history.



### **Marisa Marinelli**, English and Philosophy

Faculty Mentor: Professor Jason Grinnell, Philosophy

#### **Rawls & Racial Injustice**

Marisa is a December 2019 Buffalo State graduate who majored in English and Philosophy. She is currently taking a gap year to decide whether to continue on to graduate school in one of the two disciplines, or to pursue law school.

During her fellowship, Marisa read and wrote extensively on different theories of justice and their real-world implications in the United States. She discovered that the application of John Rawls' theory can be helpful in pointing out racial injustices present in fundamental aspects of the American criminal justice system today. Marisa has an academic paper pending on her research on theory and practice in institutional policy in the United States.



### **Connor McGrath**, Biology

Faculty Mentor: Professor Gavin Leighton, Biology

#### **The Evolution of Mimicry in Hairy and Downy Woodpeckers**

Connor is a junior in Biology scheduled to graduate in spring 2021. After graduation, he is interested in pursuing further education in the field of Biology. He has had a lifelong interest in zoology and plans to pursue a career in the field. He also has a strong interest in illustration, which was an important aspect of his research project methods. Researching woodpecker plumage and behavior was his first formal research study.

During his fellowship, Connor found that the correlation between model placement on bird feeders and the resultant bird activity appear to be governed both by the presence of a woodpecker model, but also the species of birds interacting with the model. The species-specific effect may be due to differences in dominance between the woodpecker species and the third-party species. Some birds, such as grackles, are more dominant than Downy woodpeckers but less dominant than Hairy woodpeckers, and thus have learned to disregard smaller models, despite the similar appearance of the two. In contrast, other, smaller birds, such as house sparrows, reacted similarly to both models, hinting at a low enough level of dominance to fear white and black woodpeckers in general, regardless of size. These patterns display a greater complexity of effects of mimicry, in that not all birds respond to mimicry in the same way. Connor's conclusions raise further questions about possible target species for the effects of this phenotype.



### **Taylor Seymour**, Philosophy

Faculty Mentor: Professor John Torrey, Philosophy

#### **The Lyceum Project**

Taylor is a senior in philosophy and English expecting to graduate in spring 2020. She has been interested in pursuing law, specifically family law, in order to help young children. After graduation, she plans to pursue a J.D. degree and aspires to practice law for the benefit of children.

During her fellowship, Taylor created a week-long philosophy summer camp program designed to expose pre-college students to tools, problems, and concepts in philosophy, based on a “learner-centered” teaching method. During the course of the program, she observed the benefits and issues with this method of teaching, in addition to focusing on which philosophical material the students gravitated to the most. She found the students participated enthusiastically in all aspects of the program, but seemed specifically interested in ethics, which helped them form their own beliefs and have a better understanding of others.



### **Jon Shaffer**, Mechanical Engineering Technology

Faculty Mentor: Professor Saquib Ahmed, Mechanical Engineering Technology

#### **Tin-based Perovskite Solar Cells: Simulation Studies to Critically Assess Limiting Kinetics**

Jon is a senior in the Mechanical Engineering Technology program who is expecting to graduate in the spring of 2020. He is interested in the fabrication and mechanics of perovskite solar absorbers as well as piezoelectronics. After graduation, he is looking to either pursue a Master's degree in Nanomaterials or possibly moving into the private sector to continue his solar research.

During his fellowship, Jon familiarized himself with a solar simulation software known as SCAPS in an attempt to further his understanding of perovskite cells. Using this software, he is now able to calculate and tabulate the electrical and optical properties of theoretical perovskite structures, which will give way to finding the most efficient stackup in a lab setting. Examples of this work done by him using a simpler software have been published in three different academic journals, and presented twice last year at each meeting of the Materials Research Society. Jon's research earned him an internship at the National Institute of Standards and Technology, working with the Center for Nanoscale Technology and Science from January through April 2020.



### **Ryan Tetreault**, PSY 496: Honors Thesis I

Faculty Mentor: Professor Robert Delprino, Psychology

#### **A Comparison of Work and Manager Preferences Held by College Students**

Ryan is a senior Psychology major who is graduating in spring 2020. After graduation, he plans to pursue his interest in the overlap between psychological theory and business in graduate school. He aspires to a career in business consulting, where his knowledge in psychology can be applied in areas such as organizational behavior, business strategy, and management.

The fellowship afforded Ryan the opportunity to create a research-based survey that measured the work and manager preferences held by students and employees. Following an in-depth literature review and survey development, he recruited students at Buffalo State as subjects for data collection and analysis of comparative responses based on academic major. A significant finding was that inadequate feelings of connection at college were related to reports of dissatisfaction with life. Ryan's research results were accepted for presentation at the annual Eastern Psychological Association (EPA) conference, which will take place digitally in June 2020.



### **Andrea Vines**, Biology

Faculty Mentor: Professor Derek Beahm, Biology

#### **Manipulating Gap Junction Assembly and Communication in CHO Cells**

Andrea is a senior Biology major with a minor in Chemistry, and expects to graduate in Spring 2020. After graduation, she plans to pursue her research interests in molecular and cell biology during a gap year before attending medical school.

During her fellowship, Andrea made an important laboratory discovery by demonstrating that the ability of CHO cells to communicate through gap junction channels was highly sensitive to the age of the cell monolayer. This discovery provided a long-sought explanation for discrepancies in the data of other student projects conducted over the last two years. Andrea also demonstrated that gap junction assembly in CHO cells could be dramatically enhanced by increasing total membrane protein levels whereas reducing potential steric or electrostatic hindrance to gap junction formation was ineffective in making the cells communicate more. These findings will be investigated further by future students, with the intent of publishing results incorporating Andrea's contribution in a peer-reviewed scientific journal.



### **Melique Young**, Psychology

Faculty Mentor: Professor Jevon Hunter, School of Education

#### **“They not Black Black, they Kanye”: Exploring Buffalo’s Black Adolescents’ Identity through their Schooling Experiences**

Melique expects to graduate with a B.A. in Psychology in May 2021 and intends to pursue a Ph.D. in Psychology. Professionally, he plans to serve his community by using his expertise and talents to work with people who have been diagnosed with mental illness.

During his fellowship, Melique performed a qualitative research study exploring the racialized educational identity development among Buffalo’s African-American adolescents. His work leveraged the concept of Nigrescence from Black Psychology to unearth the counter-stories of local Black youth in an effort to learn whether there was a relationship between their schooling experiences and identity development. His findings suggested that Buffalo’s African-American adolescents viewed a consequential disconnect between schooling practices and their identity. As a result of his research, Melique offered some recommendations that could strengthen the connection between Black youth and school practices. He presented his research at the 2019 Professional Development Schools (PDS) Consortium hosted by SUNY Buffalo State, and also presented on a panel at the 44th annual National Council for Black Studies (NCBS) conference in Atlanta in 2020.













## Arts

### Art of the New Russia: Contemporary Art in St. Petersburg

**Lauren Cox**, Graphic Design

Faculty Mentor: Professor Yola Monakhov Stockton, Art & Design

This research project is a study of contemporary Russian art and its relation to the social and political climate in which it exists. Art in Russia before and after Soviet times was largely created either for or against the government. The avant-garde artists and performers of the early twentieth century sought to make work that was experimental and non-conformist, while many Constructivist artists made work in support of the post-revolutionary government. Starting in the 1930s, Socialist Realism put tight restrictions on artists and only work glorifying the state was allowed. The past century of Russian history has created a culture that draws from the lavishness of the Tsars, the revolutionary spirit of the Bolsheviks, the oppressive nature of Stalinism, the fall of the Soviet Union, and the rapid catch-up to the rest of the twentieth-century developed world. The goal of this research was to answer the question of how the political and social climate in post-Soviet Russia influences the content and form of work being produced, and to analyze how artists are responding to themes such as nationalism and human rights. Research was collected through interviewing contemporary artists in St. Petersburg who are creating work that is directly related to their social and political surroundings.

### Brahms: A Pious Mourner

**Mason Battle**, MUS 303: Music History 2

Faculty Mentor: Professor Carolyn Guzski, Music

Johannes Brahms's (1833-1897) *Ein Deutsches Requiem* [A German Requiem], op. 45 (1868) is his longest composition and a major musical work of the Romantic era. The Requiem ("Mass for the Dead" in Roman Catholic tradition) unfolds in seven movements scored for mixed chorus, orchestra, and soprano and baritone vocal soloists. This highly expressive work was written in a state of deep mourning, as Brahms began to create it in the year of his beloved mother's death. Brahms may also have been inspired by lingering melancholy over the tragic premature death of his colleague and champion Robert Schumann in 1856. Brahms's devotion to a religious work even during this extended mourning period may come as a surprise, given the modernist interpretation of Arnold Schoenberg's widely-read "Brahms the Progressive." Schoenberg's article, which

painted Brahms as an agnostic progressive, carried on this idea for years after its publication. But this may not be the full story. As Brahms was a native of Hamburg, a city with a significant Protestant heritage, one may rightly assume that he was greatly exposed to German Lutheran traditions. After analyzing the Requiem in detail, I conclude that it is safe to say Brahms was a pious man. Brahms uses exclusively text from the Lutheran Bible that is commonly interpreted as a Requiem for the living, as opposed to the focus on the afterlife of the Catholic Requiem. Though the Lutheran sacred vernacular differs immensely from the original ecclesiastical Latin source, Brahms still invokes a strongly Christian essence in his music without ever bringing the name of Jesus, or even God, into the text of the work. In mourning his mother, Brahms immersed himself in his art and naturally turned in *Ein Deutsches Requiem* to the comforts of faith.

### Brayden Talks About Her Feelings

**Lelia Spencer** and **Kent Botia**, COM 495: Short Narrative Film Producing

Faculty Mentor: Professor Meg Knowles, Communication

*Brayden Talks About Her Feelings* is a 15-minute narrative film focused on Brayden, a college dance student struggling to come to terms with her previous romantic relationships. Research included a study of major films in the genre, resulting in an original script. The film was produced, shot and completed in the course of one semester. The film is inspired by and adopts the style of the "Mumblecore" film genre, popularized starting around 2005 by directors Andrew Bujalski (*Hannah Takes the Stairs*, 2007) and the Duplase brothers (*The Puffy Chair*, 2005). In the Mumblecore tradition, this film is produced with available resources during the pandemic, including post-production on available editing systems. Mumblecore methods and aesthetics, identified by film scholars Stefan Popescu and Amy Taubin, include low budget, DIY productions with understated direction of dialogue intensive scripts about daily life. Mumblecore cinematography utilizes natural lighting and realistic location sets. The genre allows for improvisation, with a heavy focus on the relationships between the characters, who are most often disaffected youth recently graduated from college and trying to make their way in the world. The film emphasizes realism, conveying this stylistic choice through natural lighting and coloring and minimal dialogue to draw attention to the inner life of the characters. Brayden captures realistic conflicts and interactions that speak to a target audience of college-age millennial viewers who identify with scenarios reflecting their everyday lives.

## Claude Debussy: The Truth About the Première Rhapsodie

**Felicity Barnes**, MUS 303: Music History 2  
Faculty Mentor: Professor Carolyn Guzski, Music

Claude Debussy (1862-1918) composed one of the most famous pieces in the solo clarinet repertoire, the *Première Rhapsodie* [First Rhapsody]. One of the two pieces he wrote for this instrument, the *Rhapsodie* was commissioned by the Paris Conservatoire for its annual clarinet exam. As a “Solo de Concours,” the music is intended to showcase the entirety of the clarinet’s technical and artistic capabilities. As a practicing clarinetist, I focus on the technical aspects of this piece, as it contains many difficulties for the advanced player. It is a test of endurance, range, and breath support that requires a professional level of performance technique. Through listening to and performing the piece while analyzing its musical score, I have gained a better understanding of why Debussy’s *Première Rhapsodie* is not only a technical challenge useful for pre-professional assessment. It remains popular due to its artistic excellence and has endured as a central work in the woodwind repertoire.

## Danzón: Afro-Cubanism Meets Mexico

**Yamilla Tate**, MUS 303: Music History 2  
Faculty Mentor: Professor Carolyn Guzski, Music

The world of symphonic performance is arguably Eurocentric: dominated by European composers and genres, and leaving very little room for the appreciation of North American and Latin American orchestral works. Latin America is rich in its musical culture, due to its variety of national and regional cultures that offer a wide array of artistic perspectives and unique expressive capabilities from a multitude of ethnic groups. My presentation will look at Mexican composer Arturo Marquez’s *Danzón* No. 2, a highly evocative piece which I feel epitomizes the sound of Latin America and showcases the particular contributions of Afro-Latinos in Latin culture. The composition is rich in Latin rhythms, forceful brass writing, and inspiring string melodies, all common traits of the traditional Cuban *danzón*. I analyze the course of Marquez’s *Danzón* throughout Latin American history and the roles it has occupied within the burgeoning Afro-Cuban culture of the nineteenth century. Alongside these aspects, I consider the composer’s own views of the genre, using contemporary commentary that gives a sense of how it reached Mexico. My goal is to engage listeners in Latin America’s diverse musical culture, perhaps becoming more open-minded to orchestral works that break with European tradition. I hope that people may also come to appreciate the vital role Afro-Latino culture has played in the artistic development of Latin America as a global force.

## Discovering Home: Stories of Asylum

**Aaron Davis**, Theater  
Faculty Mentor: Visiting Professor Naila H. Ansari, Theater/Dance

I look to tell stories through movement of people discovering “home”: what people think of home and how they feel when they are home. I investigate how space and location can expand my movement knowledge and the ways space is in constant change. I have had the opportunity to explore migration and the concept of home with my work with Jericho Road Vive Shelter through the Dance program at Buffalo State. Vive is a “...shelter (located in Buffalo, NY) that houses refugee claimants waiting for appointments/interviews with the Canadian Border Services Agency and asylees hoping to apply for U.S. asylum.” I am working as an assistant dance director for their annual gala. With help from my mentor and gala choreographer Naila Ansari, I have assisted in producing a dance work telling stories of refugees in search of home.

## East Meets West: Exoticism in Puccini’s Madama Butterfly

**Alison Cleary**, MUS 303: Music History 2  
Faculty Mentor: Professor Carolyn Guzski, Music

My project focuses on Italian composer Giacomo Puccini (1858-1924) and his famous opera *Madama Butterfly*. The opera embodies the concept of exoticism, particularly in its depiction of Japanese culture. I analyze selections from *Madama Butterfly* in order to reveal its composer’s efforts to transmit a sense of Asian-influenced stylistic features. To do so, I examine the opera’s melodies, harmonies, and orchestration, and show harmonic and melodic themes that reference Japanese cultural influences with examples from the opera’s musical score. In addition, I look more deeply into the concept of artistic exoticism as viewed by cultural scholars. I shall compare and connect the exoticism of *Butterfly* to other works of Puccini, as well as to those of previous composers in music history. Finally, I discuss the composer’s background through biographical sources, including his nineteenth-century musical influences and the era’s fascination with the “exotic” in art. I will explain what originally inspired Puccini to adapt the *Madama Butterfly* story for the lyric stage, as well as the impact the opera had after its premiere and beyond.

## Eternally Young and Full of Greatness: Mozart

**Alyssa Agro**, MUS 303: Music History 2  
Faculty Mentor: Professor Carolyn Guzski, Music

After the Baroque Era concluded with the death of Bach in 1750, three central composers influenced the musical world: Wolfgang Amadeus Mozart, Ludwig van Beethoven, and Franz Joseph Haydn. These composers became known as the First Vienna School. As a member of this School, Mozart mastered

many genres of music, particularly the instrumental sonata. Mozart's Piano Sonata in C Major, K. 545 (1781) represents the apex of the Classical Era and style. One can see that to compose and perform this piece took great skill. This masterpiece of absolute music--instrumental music that is not intended to be depictive--embodies Mozart's musical genius. I demonstrate how Mozart's use of musical elements such as melody and melodic ornamentation throughout this piece contributes to the structure of classical sonata form. Mozart was able to create this piece with great speed and accuracy, possibly a product of the comprehensive educational background he obtained in childhood. With help from his father, Mozart received the opportunity to study many past composers. In K. 545, the application of compositional techniques Mozart had acquired are seen directly in the musical score itself. My analysis reveals similarities among rhythms and melodic motives throughout each movement of the sonata. Mozart took the simplest of ideas and turned them into an enduring masterpiece, one that remains frequently performed to the present day.

### **Exploring the Impact of Art-Making on Mood: Painting as Mood Booster for Individuals with Developmental Disabilities**

**Riley Thomas**, HON 400: All College Honors Colloquium  
Faculty Mentor: Professor Rachel Sikorski, Art and Design

Creating art appears to impact the mood of individuals with developmental disabilities. The goal for this research project was to see if this impact has a positive or negative effect on the mood. Participants include both men and women, whose ages range from 18-73 years old, with varying degrees of impairment associated with a developmental disability. For example, some are verbal and some are nonverbal. Each individual was given their own set of acrylic paint, along with a variety of paintbrushes and paper, to complete an art activity on their own in thirty minutes in any way they saw fit. Using a picture scale with faces that depict various emotions--happy, sad, angry, excited, neutral, and confused--each individual was asked how they felt before the activity, during the activity (15 minutes), and after the activity was completed. The responses to the picture scale determine if and how the individual's mood may have been impacted by the art activity. The results may not be consistent, since each individual has their own wants and needs; and what may be a positive experience for one might be neutral or negative for another. For the men and women who do find this painting activity as a mood booster, hopefully they may be able to incorporate this creative activity into their lives as a coping resource when needed.

### **Franz Schubert and His Final Song Cycle Journey**

**Mackenna Beattie**, MUS 303: Music History 2  
Faculty Mentor: Professor Carolyn Guzski, Music

My project focuses on Franz Peter Schubert and his final song cycle, *Der Winterreise* [Winter Journey], which was composed and published shortly before his passing. I analyze three specific *Lieder*, or individual songs for voice and piano, from the twenty-four that make up this celebrated *Liederkreis* [song cycle]: "Gute Nacht [Good Night]," "Einsamkeit [Loneliness]," and "Der Leiermann [The Hurdy-Gurdy Man]." The musical concept for "Gute Nacht [Good Night]" is expressed through modal shifts that occur in the melody throughout the song. In "Der Leiermann [The Hurdy-Gurdy Man]" I focus on the specific instrument Schubert evokes: the hurdy-gurdy, which is used as a drone sounded by the piano as the singer expresses despair amidst his slowly deteriorating mental state. I use examples from the musical score to show specific musical events during the course of the song cycle, along with background biographical knowledge on Schubert himself and details of his compositional technique. My project goal is to communicate a sense of how and why Schubert composed in the *Lieder* genre so prolifically and masterfully, through a better understanding of specific examples within his final song cycle.

### **Improving Bowl Woodturning Skills and Experimenting with Bountiful Bowls**

**John A. Burek**, Metals/Jewelry  
Faculty Mentor: Professor Sunhwa Kim, Art and Design

I present a slideshow of the original artwork and skills I learned at the John C. Campbell Folk School, which will include the new items I have created since my training. The purpose of this arts training was to improve the skills required for woodturning on a lathe and, more specifically, the skills required for turning bowls. These skills precede the expertise required for turning hollow-form vessels and original artwork pieces. This training also allowed me to return to Buffalo State with the skills required to teach woodturning to other students in the wood furniture program.

### **Mahler and the Fine Line of Tonality**

**Cassidy Faddis**, MUS 303: Music History 2  
Faculty Mentor: Professor Carolyn Guzski, Music

Gustav Mahler's (1860-1911) famously unfinished Symphony No. 10 (1910) begins with an Adagio, which is unique. But it is also intentional, deliberately creating a meaningful association with his Symphony no. 9, which concludes with an Adagio movement. The Tenth Symphony includes an opening Andante-adagio, followed by a Scherzo, "Purgatorio," a second Scherzo, and concluding Finale. I analyze the soaring viola solo that opens the Tenth Symphony's Adagio with a strongly

yearning mood that comes full circle in the concluding Finale. The main theme and its contrapuntal echoes in the Adagio are led by this reflective viola solo, which is transformed in various guises throughout the movement, a technique also seen in the finale of Beethoven's Symphony no. 9 and in Berlioz's *Symphonie Fantastique*. Mahler builds his ideas to a cataclysmic climax, defined by a harmonically dense nine-note chord whose suddenness shatters the strength of the previous music that now fades into silence. Throughout my project, I explore the harmonic line that Mahler teeters between—tonality and atonality—as he opens a door towards twentieth-century Modernism, where his protégé Arnold Schoenberg (1874-1951) had already created a pathway. I use primary source letters, as well as historical and biographical studies, to show how Gustav Mahler's use of compositional techniques (such as symphonic orchestration) conveyed an aural idea of tonal ambiguity that mirrors aspects of his life and imminent death during the creation of the Tenth Symphony.

## The Makeup Design Process

**Sydney Bouthsavong**, ALT 490: Senior Seminar  
Faculty Mentors: Professor Joy Guarino, Theater and Professor Ann Emo, Theater

The purpose of theatrical makeup is to accentuate the actor's appearance and enhance the role of a character. Makeup can be one of the most essential devices in a production. It assists with indicating a situation and furthering the narrative of the story by adding detail and personality, which is crucial to storytelling. My research documented the process and steps that are necessary for a makeup artist to follow in order to create and design for theater and film productions. The purpose of the project is to guide future designers with finding their process and also to educate them on their role as part of a design team. My poster discusses the process of becoming a makeup designer and explains the standards in the industry. Because the makeup artist is part of a collaborative team, the project also documents the importance and value of clear communication within the group of people working together in order to tell the story and how the makeup artist executes their role within the plan to achieve a particular end result. The team effort includes researching the materials needed, going to meetings, communicating individual process of design, understanding the relationship between a director and several designers, previewing, and executing and finalizing a design. I interviewed other creative artists involved in this process to provide another perspective on the design process, offer a different view on the levels of collaboration with a team, and evaluate the impact on the final makeup design. The poster summarizes each step of my makeup design process and also includes photos from past performances to provide a visual aid and enhance the understanding of the step by step process.

## Marta Minujín: From the Sixties to the Twenty-First Century

**Szenina Russo**, FAR 471: Senior Seminar in Art History  
Faculty Mentor: Professor Harriet Blitzer, Art & Design

The inspiration for my project started when I personally experienced the exhibit *Menesunda* while visiting the New Museum in New York. This was Marta Minujín's installation on display in 2019, a re-creation from the installation of the 1960s. From this I developed an interest in researching Marta Minujín's destruction of her own artistic work, and the subsequent re-creation, through the extensive use of secondary sources. Minujín's installations, videos, sculptures and happenings are meant to be experienced. Every artwork that Minujín has created has been based on issues in society, contemporary theories, or the lives of talented, intelligent individuals. Minujín befriended Andy Warhol when she began to spend years at a time in New York, and the artists influenced each other's creative processes. Others who had a great impact on her life and art were the artists Alberto Greco, Jean Tinguely, Christo, Robert Rauschenberg and the philosopher Marshall McLuhan. Minujín as an artist is most interested in making others feel alive, understand what is going on in the world, and focus their attention toward positive or negative images in life. Marta Minujín is an artist who has not conveyed messages through traditional fine art. Her philosophy depends on the participation and involvement of the public. This affects the way that she creates, destroys and recreates her artistic projects.

## Orchestrated by Dante

**Harold Jacob**, MUS 303: Music History 2  
Faculty Mentor: Professor Carolyn Guzski, Music

Robert W. Smith's (1958) *First Symphony, The Divine Comedy* (1995), was based on Dante Alighieri's trecento literary masterpiece. First published in 1472, *La divina commedia* is now a staple of Italian Renaissance literature still influential among artists and writers today. Dante has previously served as an artistic catalyst for many creative individuals. Adaptations of the *Divine Comedy* have appeared in previous symphonies, film, and most recently in a videogame and an animated epic. Robert W. Smith is one of the very few musicians who has composed a symphony based on all constituent sections of the *Divine Comedy*: *Inferno*, *Purgatorio*, *The Ascension*, and *Paradiso*. Each musical movement has distinct characteristics that aurally depict what Dante imagined witnessing and experiencing as he traversed through the Afterlife. *La divina commedia* was for Dante more than just theology—it is the author's own story in which he is the protagonist, with themes that relate to his personal life and relationship to the Roman Catholic Church and politics of his native Florence. My project seeks to explain how Dante Alighieri's *Divine Comedy* has found continued relevance in Smith's *Symphony*, through the composer's musical interpretation of a great literary work.



## Program v. Absolute: Beethoven's "Moonlight" Sonata

**Molly Secord**, MUS 303: Music History 2  
Faculty Mentor: Professor Carolyn Guzski, Music

My project explores the opening movement of Ludwig van Beethoven's (1770-1827) Piano Sonata in C-sharp minor, op. 27, no. 2 (1801), more famously known as his "Moonlight" Sonata. The research focus is an exploration of interpretative differences between "absolute" and "program" music, reinforced by my own primary score analysis. My discussion compares the rhythmic ostinato used by Beethoven with Mozart's strikingly similar figure in "Ah! Soccorsio" (Act I) from the opera Don Giovanni (1787). Beethoven named his work "Sonata quasi una Fantasia," which translates to "Sonata in a manner of a fantasy." That piece of information leads us to believe that the pathbreaking composer was referring to the freedom of form beginning to emerge in absolute musical genres at the inception of the Romantic era. I also use historical and theoretical sources to further my project goal: contributing to an understanding of the possibilities of absolute music, and Beethoven's transformative power, at the end of the Classical era through his most influential and frequently performed piano work.

## Revealing Bolero: A Look into the Psyche of Maurice Ravel

**Elsie M. Herold**, MUS 303: Music History 2  
Faculty Mentor: Professor Carolyn Guzski, Music

My research offers a psychoanalytical perspective on the twentieth-century French composer Maurice Ravel (1875-1937) through his most popular work, Bolero (1928). Many questions have arisen over the years concerning Ravel's mental health. Ravel became chronically ill in midlife, suffering from memory loss and repeatedly isolating himself from society. Though no posthumous diagnosis can be certain, many neurologists agree that Ravel suffered from primary aphasia, a loss of language ability—and possibly musical comprehension—due to brain damage resulting from his time serving in WWI. Ravel composed Bolero in this increasingly unstable psychological state. The orchestral work is famous for its use of a rhythmic ostinato sounded in snare drum and equally mesmerizing repetitive melody. Listeners nearly fall into insanity themselves after hearing this sixteen-minute cyclical monster! This project attempts to synthesize the work of neurologists, biographical accounts from Ravel's life, and his own compositions to argue that Bolero's hypnotic artistic effect resulted from Ravel's primary aphasia.

## Saint-Saëns: Four Movements, Four Emotions

**Julianna Ellis**, MUS 303: Music History 2  
Faculty Mentor: Professor Carolyn Guzski, Music

Although French composer Camille Saint-Saëns (1832-1921) is not among the most famous musicians of the Romantic era, he is still one of the great composers of the nineteenth century. My project covers one of his lesser known pieces, the Sonata for Clarinet and Piano in E-flat major, op. 167 (1921). This four-movement piece for solo clarinet respects the traditional multi-movement Classical form associated with the genre. The first movement is an Allegretto; movement two is a minuet inspired by French Baroque dance; movement three is a slow Lento; and the final movement is a characteristically lively Molto allegro. The Sonata's opening theme comes full circle with its repetition at the conclusion of the fourth movement, making the piece cyclic. This concept was pioneered by another French Romantic composer, Hector Berlioz, in his *Symphonie fantastique* (1830). Through biographical and score studies, I examine Saint-Saëns' stylistic and cyclic influences in the Clarinet Sonata, such as rhythmic motifs that are heard throughout the piece and unite its musical movements.

## Storytime: A Solo Exhibition

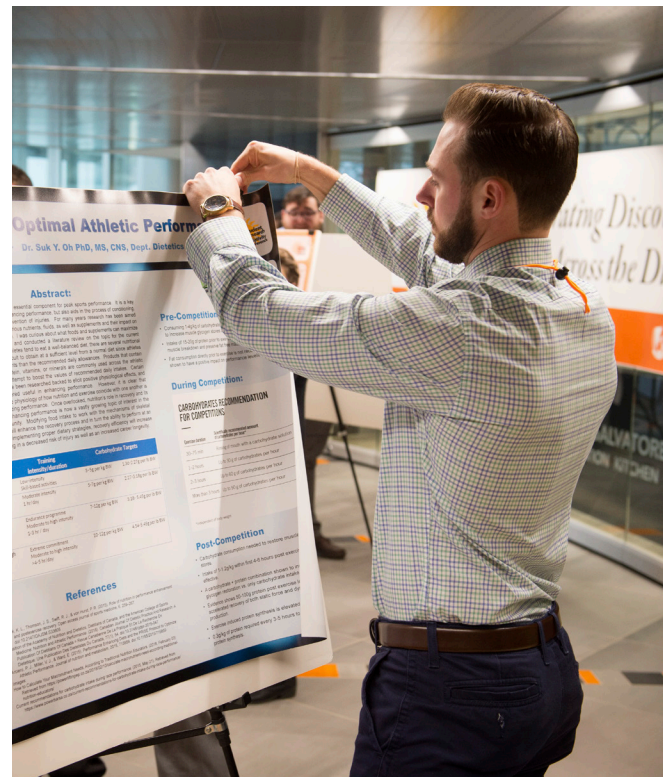
**Emma Roberts**, DES 414: Senior Seminar/Exhibition  
Faculty Mentor: Professor Stan Friesen, Art & Design

Like most children, I had a vivid imagination growing up. I was constantly drawing and creating worlds, characters, and playing make-believe. I remember hearing *Harold and the Purple Crayon*, *Dr. Seuss*, and *Where the Wild Things Are* read to me as a child and being engrossed by the worlds the authors created. As I became older, I read more and more, but also found myself paying attention to the visuals. I was drawn to graphic novels and followed a vast array of illustrators online. I have been most inspired by illustrators Andy Ristaino and Lois Hannah, who have created beautiful, extensive worlds and characters. Their work has shown me how illustration can make the reader feel like part of a character's life and what it's like to share a world with them. To this day, whenever I read a book or view an illustrator's work, I am fascinated by what they bring to the page; each one giving life to unique characters, settings, and storylines. And with that, I invite you to be drawn into a world that I have created and take part in the story before you.

## The Street Life of Trees: An Urban Guide

**Jackie Chuchanis**, DES 495: Total Design-Urban Tree Guide  
Faculty Mentors: Professor Carol Townsend, Art & Design,  
Professor Robert J. Warren, Biology and Dr. Susan McCartney,  
Small Business Development Center

The main objective of this project is to enhance awareness of urban ecology in our region. To this end, I am working with a highly qualified team, ensuring the project's integrity. My part in this collaborative real-world experience began with a request for illustrating and designing a publication for Buffalo State's Maude Gordon Holmes Arboretum. There are thirty illustrations for which initial research was done in the Eckert Herbarium. I made sketches from specimens of the various shrubs and trees showcasing their identifying features. Additionally, I photographed on-site. These photographs and sketches were brought into Adobe Photoshop along with color toning. After adding color and contrast, I added filters to abstract the image. Then, I colorized each even more. I also was tasked with creating a graph for their ecological impact. The result will be a professionally printed fifty-six page bound book, for which I design the pre-publication layout.





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## ***Business, Fashion & Textile Technology, Hospitality and Tourism***

### **Corporate Social Responsibility: Do Companies Have a Responsibility to their Employees and their Welfare? The Answer is Yes.**

**Ifunanya Nwokedi**, HON 400: All College Honors Colloquium  
Faculty Mentors: Professor Michael Littman, Business and Professor Michael Johnson, Modern and Classical Languages

More than ever, employees want to work for and with a company with a strong social conscience. Developing a social conscience for your company not only impacts the greater good of society but it has a positive effect on employee morale and customer loyalty. Do companies have a responsibility to their employees? The answer is yes. Companies, no matter the size, do not operate in a bubble. The decisions a company makes impact their employees inherently, especially minimum-wage employees who are often deemed expendable due to the unstable nature of their employment. It is known that businesses are legally obligated to make profits and satisfy their shareholders, but that does not excuse negligence of their employees. The recent outbreak of the Coronavirus pandemic has, unfortunately, exposed the inability of some companies to care for their employees in a time of dire need. That being said, where does one draw the line between legal and moral responsibility? Where does fulfilled minimum legal/ ethical obligations towards one's employees end and true responsibility and care for one's employees start? How can companies be more socially responsible to their employees not just on paper, but in practice as well? In my research project, I explore these ideas, investigate the ways in which companies have potentially failed their employees, and devise possible solutions to these issues.



### **Foreign Business: Entering Brazil**

**Evan Cody**, HON 400: All College Honors Colloquium  
Faculty Mentors: Professor Yew Wah Chow, Business and Professor Michael Johnson, Honors

My scholarly project creates a document that contains the basic cultural, economic, political, geographical, and regulatory information needed to start a business in Brazil. Getting involved in international business can be extremely complicated. Most countries have obscure regulations or cultural differences that can hamper a business's international prospects. For instance, in Brazil a bill of lading will only be accepted in a certain ink color. In my research, I use sources and websites provided to me from a previous international business class. Some of the most significant observations I've made regard to how serious the Brazilian people take their cultural beliefs and practices. For example, Brazilians will break off potential business partnerships if they feel their cultural isn't being accepted or appreciated, whereas Americans are more or less willing to ignore those types of issues.

### **The Lost City: Fashion Design for A Utopian Future**

**Amber Pollock**, FTT 451: Senior Project  
Faculty Mentor: Professor Alexandra Eagen, Fashion Textiles and Technology

Originally conceived in Plato's works *Timaeus* and *Critias*, and commonly recognized as a prehistoric utopia, Atlantis met its fateful end, sinking in the depths after losing favor with the Gods for attacking Athens. Plato's believed purpose for this tale was to encourage using the story to examine our own ideas of government and power, as well as their limits. To this day Atlantis and its splendor captivate the minds of people around the world without being recognized for its true purpose. So, what should we take away from this acclaimed philosopher? We can acknowledge that we, ourselves, can be like Atlantis. Living in our own reality, our own utopia of a narrow perspective, in which the world, "the Gods" and simply other people revolve around us. This is where world problems begin, in the self. Through a surrealistic approach, mixing various styles, spanning eras, cultures and metaphysical ideologies, *The Lost City* embodies unification and empowerment. It holds the beauty of the Utopia we all desire to create and thrive in. A world community that prospers together, as we realize we are all the same, only separated by chance and circumstance. I created six dresses that have been described as "Historical, but in the domain of Gods" and "Ethnic in an indescribable way" to empower all women and emphasize that a true Utopia cannot be created without our involvement and ascension into world powers. Through lightweight fabrics like broadcloth, chiffon and organza, and designs centered around draping, *The Lost City* showcases feminine dynamism.

## **Oh, The Places You Could Go!**

**Carrie Penepent**, BUS 389: Rijeka Bound Community Service

Faculty Mentor: Professor Christine Lai, Business

My original goal was to visit Europe's Capital of Culture--Rijeka, Croatia--and engage myself in Rijeka's cultural community through exploration and research. Due to Covid-19 strictures, I have transformed my project into a similar pictorial of Buffalo, known as the "Queen City." I use photographs of numerous locations significant to life in Buffalo, past and present: the Hotel Henry, Burchfield Penney Art Center, Albright-Knox Art Gallery, Delaware Park and its Rose Garden; Hoyt Lake; the Buffalo History Museum; and others of cultural importance.

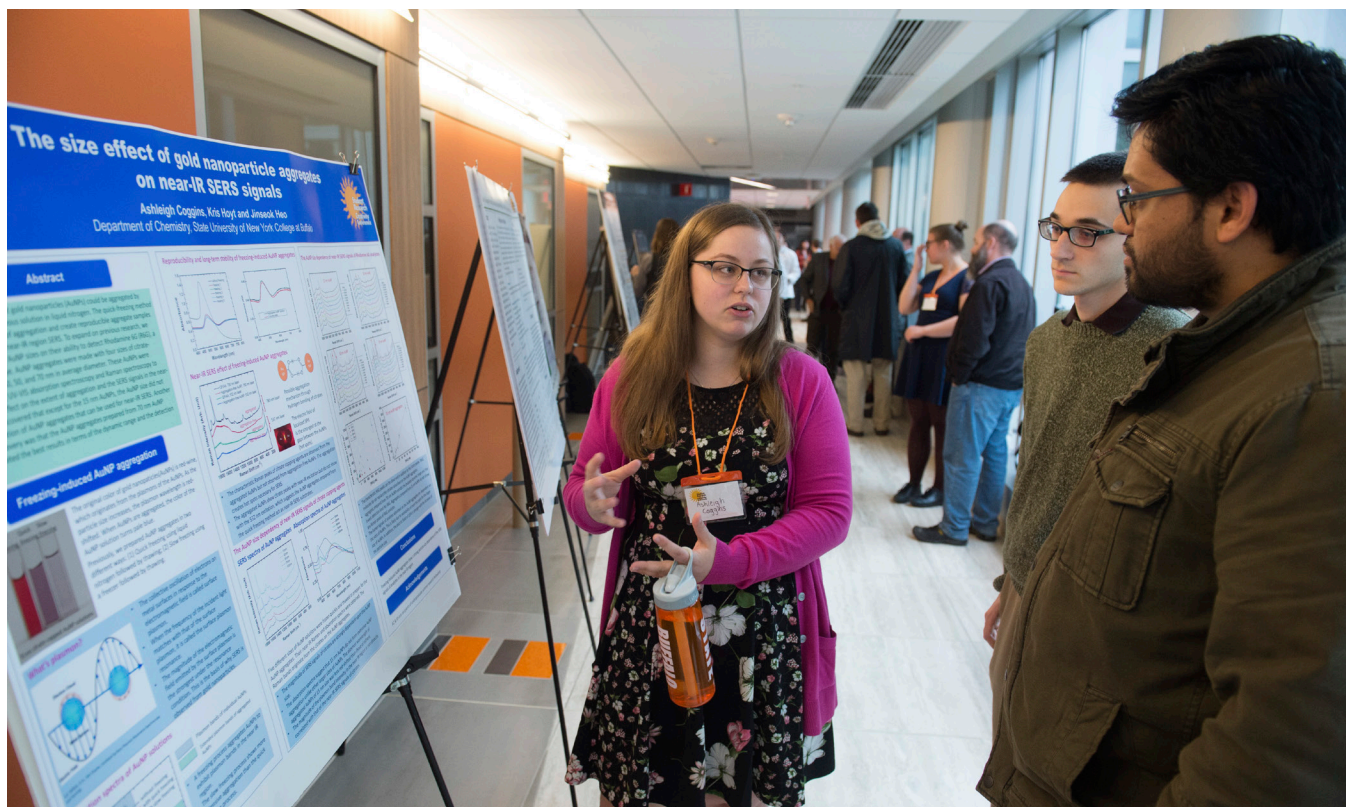


## **Pictorial of Buffalo Architecture**

**Kayla Davidson**, BUS 389: Rijeka Bound Community Service

Faculty Mentor: Professor Christine Lai, Business

My original goal was to observe and document the history of Rijeka, Croatia through various architectural structures in and around the city. Due to Covid-19 strictures, I have transformed my project into a similar historical pictorial of Buffalo architecture. I use photographs of numerous buildings significant in Buffalo history: Emerson Place Row (1893); Annunciation School (1928); Birge-Horton House (1895); Blessed Trinity Roman Catholic Church (1923-28); Buffalo Central Terminal (1929); Buffalo City Hall (1931); H.H. Richardson Complex (1870); Buffalo Tennis and Squash Club (1915-16); Colonel William Kelly House (1937); Connecticut Street Armory (1899); Erie County Hall (1871-75); Darwin D. Martin House (1903-5); and others of architectural importance.





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# Communication and Humanities

## Critically Analyzing Betsy DeVos as a Propagandist Undermining Public Education

**Amanda Vazquez**, SPC 309: Persuasion and Propaganda  
Faculty Mentor: Professor Michael Niman, Communication

My work argues that the United States Department of Education secretary Betsy DeVos currently employs a propaganda campaign, creating disinformation to undermine her agency's goals. The U.S. Department of Education's goals are to ensure equal access to education and promote student achievement and competitiveness on a global scale. DOE is a federal government agency that provides educational support and aid to schools around the country. Their objectives, however, do not coincide with DeVos's personal educational agenda. While the DOE promotes equality and affordable education to all students, DeVos promotes private school funding at the cost of public schools. In addition, DeVos claims to support at-risk children, yet these families cannot afford private school tuition. The research methods I utilize examine a combination of data analysis and case studies. I identify propaganda techniques and categories of propaganda being used. My work involves an analysis of DeVos's statements and actions to demonstrate how she is a propagandist. DeVos imposes disinformation, and her actions often conflict with her public statements. As a society, we must open our eyes to the propaganda that is being displayed on mass media platforms. We must understand the true intentions of Betsy DeVos because her decisions are affecting children's education nationwide.

## Does Race Play a Role in Sentencing?

**Ashlea Green**, HON 400: All College Honors Colloquium  
Faculty Mentor: Professor Andrea Guiati, Modern and Classical Language

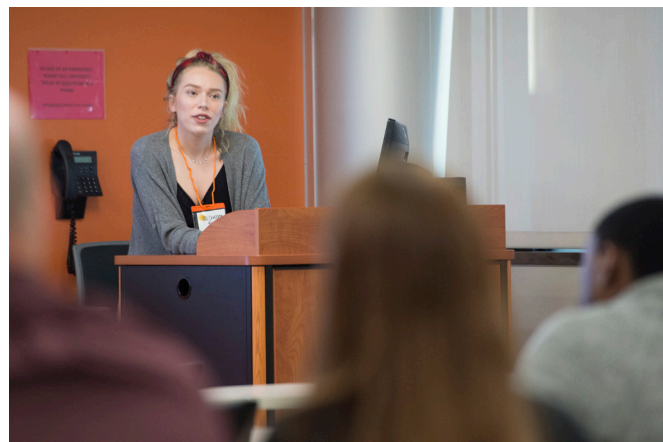
For this research project, I am exploring systemic racism and the impact of racism within the criminal justice system; more specifically, I am researching the role that race plays on sentencing. It is common for the term "systemic racism" to be interpreted as an accusation that everyone in the system is racist, but I intend to explain and prove that it should be interpreted as our nation having systems and institutions that produce racially disparate outcomes. This should be a topic on which all citizens are informed, because our criminal justice system was built and established during the "Jim Crow" era, which specifically enforced racial segregation. The racism faced during that period is still clearly reflected into today's society through the racially disparate sentencing lengths on convicted minorities. This is

a problem that can lead to an explanation as to why there is such overcrowding of minorities in our prisons and why social movements like Black Lives Matter are so prevalent. African Americans are more likely than white Americans to be arrested; once arrested, they are more likely to be convicted; and once convicted, they are more likely to experience lengthy prison sentences. Truly meaningful reforms to the criminal justice system cannot be accomplished without acknowledgement of racial and ethnic disparities in the system, especially when it has an impact on the sentencing of minority individuals.

## The Ethics of Relationships

**Elizabeth Evans**, Undeclared  
Faculty Mentor: Professor Jason Grinnell, Philosophy

Adoption or abortion: Which choice is correct? Depending on one's political stance, this question could have an easy answer, but with politics aside and morals at the front of the discussion, the issue of harm comes forward. With childhood mapping the way for future success and happiness, such a decision must be made with careful consideration. Some claim that abortion is morally wrong because it is the murdering of a person, yet "personhood" is itself more complicated than it appears. Furthermore, adoptive children's relationships with their new parents may be suspect, as may be the criteria for parenthood. Many perfectly adequate and loving people are denied the opportunity to adopt for reasons of class, gender, or sexual orientation. Allowing a child to be born and then immediately separated from their biological parents may produce an avoidable harm by leading to an identity crisis for that child. If children are entitled to loving parents, how can that be accomplished? Forcing an unfit woman into motherhood and forcing an innocent child unto unfit parents are not ideal options. Is there an ideal option? An analysis of the work of several ethicists will produce more thorough and defensible responses regarding the value trade-offs involved in adoption and abortion, and in relationships and parenting more generally.



### The Future of Designing Babies

**Kimberlin Gomez**, CWP 102: Argumentation and Research  
Faculty Mentors: Professor Jane E. Sullivan, College Writing Program and Professor Susan Mary Paige, Academic Success Program

Genetic modification or “gene editing” is the manipulation of genomes with the use of molecular engineering techniques. The two types of genetic modifications are somatic and germline, which are very different from one another. With this process, the unborn child’s parents and doctors can decide traits such as eye color, hair color, skin color, etc. This process is likely to become very popular because parents are being given the chance to create the perfect baby, the baby of their dreams. This process is also risky, as there are not too many cases of this process and its long-term effects, if any. There is the possibility that it could have detrimental effects on the embryo, including, but not limited to, deformities such as extra fingers, blindness, and vitiligo. This is assuming that the mother is even able to carry the fetus to term. The issues also debate the ethics of the doctor versus abuse of medical technology. It sparks the debate: is one reason for genetic modification of a human being more ethical than another? It may seem more ethical to modify the genetic information of an embryo to try to save the life of another child, but does it seem ethical to modify the genetic information just for the fun of it? With prior IRB approval, we collected data by replicating a study done by Dr. Bob Edwards, et al., substituting their participants with a sample group of convenience made up of first-year college students from an urban four-year public college. We find that our sample participants considered the idea of designing babies to be ethically unjust.

### The Hidden Truth of Objectification in the Media

**Alexis Williams, Avienne Golden and Katarina Flaig**, CWP 102: Argumentation and Research  
Faculty Mentors: Professor Jane E. Sullivan, English and Professor Susan Mary Paige, Academic Success Program

In the 21st century, it is humiliating to see how mainstream media in the United States of America has continued to corrupt the image of women. One may think that we, as a first-world progressive society, would have placed stronger value and respect on individuals by now; however, that is not the case. Public networks are meant to be about expression and communication, but they have slowly turned into a conduit of continued stereotypes of how women are meant to “behave” and “look.” We are still living in the past; the only thing that has changed is the saturated use of media in an effort to make money. Sexism is discreetly installed everywhere around us. In this research project, we focus solely on the music industry and how sexism is used with the intent of earning profit. Society has been programmed

by the music industry to be accustomed to the objectification of women. Younger generations are especially prone to the continued message that this type of objectification is acceptable. Throughout this presentation, we demonstrate how adolescents are affected by what they see in music videos, and why women may be continuing to allow objectification to occur. To do this, we conducted a replication of the research study done by Denise Herd in “Conflicting Paradigms on Gender and Sexuality in Rap Music: A Systematic Review.” We used college students from a four-year urban college, taking the focus away from only rap music, and looked instead at multiple genres of the music industry. We find that these students may have been impacted by what they see and hear in the music industry, and that our results are correlated to the research we found throughout our literature review.

### Improving America’s Prison System: Using Rwanda as a Template

**Victoria Dee Carattini, Jazmine Holloman and Joshua Knickerbocker**, CWP 102: Argumentation and Research  
Faculty Mentors: Professor Susan Mary Paige, Academic Success Program and Professor Jane E. Sullivan, College Writing Program

The United States penal system has one of the highest recidivism rates in the world. Despite having the largest economy in the world, the US is struggling with the cost of thousands of convicts returning to prison while other countries do not. The reality is that other countries do not have the same approach to the incarceration of convicts. This circumstance suggests recidivism is not tied to the amount of money spent on a prisoner, but instead on prisoner treatment/rehabilitation. Rwanda is a country with a lower recidivism rate. Rwanda is still recovering from the 1994 genocide, which took millions of lives. Rwanda’s approach towards prisoner treatment is completely different from the United States and focuses on perpetrators and victims coming together for reconciliation. Rwanda’s treatment of prisoners is more humane because it treats the source of the crime, rather than the expensive “time out” the United States government sentences prisoners to who have committed lesser crimes than genocide. Does Rwanda’s approach to incarceration affect rates of recidivism? Could the United States replicate this approach? With prior IRB approval, we interviewed faculty and students from an urban, public, four-year college who have first-hand experience with Rwanda’s prison system. We use these data, along with the information gathered in a comprehensive literature review, to compare the prison system and offer recommendations for reform.

## **Influences of Teen Pregnancy Portrayed in the Media on Teen Pregnancy Rates**

**Elizabeth Truesdale** and **Jasmine McKinney**,

CWP 102: Argumentation and Research

Faculty Mentors: Professor Jane E. Sullivan, College Writing Program and Professor Susan Mary Paige, Academic Success Program

The influence of social media on teens has reached great levels, and there is now evidence that it may be having a significant effect on the increase in teen pregnancy rates. In recent years, prior to the widespread use of social media by teens, teen pregnancy rates had been dropping from their all-time highest rates. With an influx of teens using social media, pregnancy rates have started to increase once again. Is social media really to blame? We complete a comprehensive literature review and collect data on teen pregnancy through interviews. We interview expecting (baby) and non-expecting sexually active teens between the ages of 14 and 18 years, and question them about their level of knowledge on teen pregnancy. We also ask them to track their media exposure, specifically looking at the influence of the media about pregnancy on teens. With these interviews, we expect to find a correlation between media exposure and increased teen pregnancy rates.

## **The Media's Role in Public Panic**

**McKenzie Locker**, HON 400: All College Honors Colloquium

Faculty Mentors: Professor Therese Fuerst, Communication and Professor Michael Johnson, Modern and Classical Languages

The media has become an essential part of everyday life. The role of media has expanded greatly over the years, and the ways that one can stay up-to-date have increased. Whether it be print, television, social media, or radio, the media is where most people get their information. The media is there to inform; however, is it helping or hurting public panic in the process? The way that the media presents information to the public, especially in times of turmoil, influences the public's reaction to a situation. The media has the ability to either calm people's worries or instill fear. Through the methodology of literature review, this study attempts to define the media's role and impact on public panic, looking specifically at larger-scale issues that have faced the United States. This study reviews 9/11, the Ebola outbreak, the Boston Marathon bombing, and the Coronavirus. Our study findings are presented in poster form.

## **Mindfulness and Consumer Culture**

**Teddi Hastreiter**, COM 450: Communication and Society  
Faculty Mentor: Professor Michael Niman, Communication

This paper examines the positive effects mindfulness has on balancing the negative and stressful effects of consumer culture. My work argues that it provides an alternative to the wants and desires associated with obsessions with products and acts of consumption, giving consumers the power to think for themselves and the agency that freedom creates. Predominantly privatistic, consumerism places the individual before the community. This paper analyzes the role consumerism plays in our society, and how mindfulness can make us aware of our purchasing behaviors and their consequences. Mindfulness not only promotes awareness towards one's actions, but shows us the realities of consumerism--good and bad. It enables us to open our eyes and become aware of the manipulative nature of branding and advertisements. In other words, mindful consumption gives us a choice: to buy or not to buy. No longer led simply by impulse, consumers are free to think about the products they consume, where these products come from, and why we are purchasing them. My methodology includes conducting a literature search regarding both mindfulness and consumerism, and using material examined in COM450 and other critical thinking classes to synthesize my analysis.

## **My Culture is Not for Your Fun**

**Brandon Rivera**, **Imani Ashmore**, **Julia Skierszynask** and **Kayla Lammerts**, CWP 102:  
Argumentation and Research

Faculty Mentors: Professor Jane E. Sullivan, English and Professor Susan Mary Paige, Student Academic Success

Cultural appropriation is the act of taking things from a culture and either claiming them as your own, or not giving credit to the culture you took from. Cultural appropriation is not new in media; it has been going on for decades. The only difference today is that we have social media highlighting acts of cultural appropriation that used to be ignored or go unnoticed. The question of how one can know whether they are truly appropriating or appreciating is discussed regularly. With prior IRB approval, we surveyed students at a public four-year urban college, as a sample of convenience. We asked study participants to respond to intentional and unintentional situations of cultural appropriation in the media, asking them if they deemed the scenarios presented as acceptable or unacceptable. We believe our study supports the idea that cultural appropriation in media and advertising isn't as unintentional as people like to pretend it is, and that study participants can identify when cultural appropriation is occurring.



### People Hurt People: The Terror and Torture Within Human Trafficking

**Jay Tracey, Michaela Reimers and Jason Rivera,**

CWP 102: Argumentation and Research

Faculty Mentors: Professor Jane E. Sullivan, College Writing Program and Professor Susan Mary Paige, Student Academic Programs

Human trafficking is an issue that is ubiquitous in human history. The matter of forced prostitution, sexual slavery, and exploitation have been exposed in the news, both in public and on the dark web, for years. Human trafficking, at its root, is a form of enslavement used to capture young women, children, and occasionally men. The traffickers do it simply to make money. They use the individuals they have enslaved in a variety of nefarious activities including, but not limited to, forced sexual activity, forced organ donation, and forced cheap or free labor. Though this is not a new problem in society, it remains a major issue. The realities reported by victims of human trafficking are both alarming and shocking. One problem in the war against human trafficking is the lack of awareness people have of the issue despite it occurring in their own backyards. Our research project investigates the level of awareness people in our community have. With prior IRB approval, we conducted surveys within a four-year urban public college asking a sample of convenience group, specifically those who are of legal voting age, how aware they are of the proximity and severity of the issue that is human trafficking. From our collected data, we can provide evidence that better education on the issue is needed as a first step to battling this atrocity.

### The Resurgence of Romantic Comedies

**Devyani Sawant,** Public Relations & Advertising

Faculty Mentor: Professor Macy Todd, English

The genre of the romantic comedy flourished from the 1980s to the early 2000s. Romantic comedies—or rom-coms, as they are informally known—opened a new market for Hollywood and thrust actors like Kate Hudson, Meg Ryan, John Cusack, and Patrick Swayze into stardom. However, film studios accustomed to releasing multiple films in this genre every year turned their focus away from rom-coms in the decade following the millennium. Recently, the release of the 2018 film *Set It Up* has reignited interest in romantic comedies, leading to a new sub-genre I have named “resurgence” rom-coms. This paper compares the cinematic techniques, themes, and character development from the Golden Age of the romantic comedy to resurgence rom-coms, in an effort to observe how the new genre evolved. The films from the resurgence studied include *Crazy Rich Asians*, *To All the Boys I’ve Loved Before*, and *Mamma Mia! Here We Go Again*. The paper will compare these films to popular romantic comedies of the past, such as *She’s All That*, *Mamma*

*Mia!*, *Love Actually*, and *My Big Fat Greek Wedding*. These films are considered iconic within the Golden Age of the rom-com, and my comparison reveals how and why the genre has developed its resurgence.

### The Virtue of Stoic Torturers: Ancient Stoicism & Modern Military Torture

**Thomas Carr,** PHI 401: Problems in Philosophy Seminar-Happiness

Faculty Mentor: Professor Kimberly Blessing, Philosophy

Stoicism, a philosophical movement of the Hellenistic period, encourages emotional detachment and self-control. Stoicism has been embraced by the modern military, which encourages mental toughness and fortitude in the face of danger. In particular, when it comes to torture, the emotional control that Stoicism teaches can be especially relevant for the torturer who is looking to extract information from a prisoner of war. If we consider the long list of war crimes and moral transgressions coming out of the United States’ conflict in the Middle East, the adoption of Stoic principles by torturers could suggest a more humane approach towards torture. On the other hand, critics of this view argue that emotional detachment has the potential to breed inhumane torturers who are incapable of noticing moral breeches in their conduct. Thus, adopting Stoic practices could encourage immoral actions and practices. I will argue against this view, showing that it arises from a misunderstanding of Stoic philosophy. Stoicism does not encourage the complete abandonment of emotion. Instead Stoicism teaches one to repress harmful emotions, and instead, seek to cultivate positive ones. Looking at relevant ancient texts, I shall demonstrate that a well-trained Stoic soldier is not incapable of feeling compassion or respect towards an enemy or prisoner. Thus, adherence to Stoicism can actually help prevent atrocities and war crimes that were all too common in the United States’ military conflicts of the early 2000s.





## **We Were Always Here: How Poetry Aligns with the Timeline of LGBTQ+ Visibility**

**Olivea Wiggins**, HON 400: All College Honors Colloquium  
Faculty Mentors: Professor Jennifer D. Ryan-Bryant, English  
and Professor Michael Johnson, Modern and Classical  
Languages

Throughout literary history, there have been lovers of all forms, yet it's only the heteronormative stories that are encouraged to be told worldwide. When did the existence of the LGBTQ+ community really become accepted by the literary world? Adrienne Rich's essay "Compulsory Heterosexuality and Lesbian Existence" and John D'Emilio's essay "Capitalism and Gay Identity" present two sturdy claims as to when LGBTQ+ existence was accepted. After taking even the slightest glance at poetry both past and modern, however, it is evident that this history extends even earlier than the LGBTQ+ theory trailblazers had envisioned. A thorough look through Arthur Rimbaud, Paul Verlaine, Gertrude Stein, and Allen Ginsberg will prove that the literary scene has always represented "not-heterosexual" love. In addition, Blythe Baird, a contemporary poet published and well-known through Button Poetry, weighs in on how these poets and many others inspired her art to grow to its present status.



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# Computer Information Systems and Engineering Technology

## 2020 ASHRAE Design Calculations Competition

**Sara Deer, Conor Mathews, Melissa**

**Bentley and Jazmin Black**, ENT 422: Machine Design II  
Faculty Mentors: Professor Jikai Du, Engineering Technology and Professor Raymond Johnson, Engineering Technology

ASHRAE, The American Society of Heating and Air Conditioning Engineers, proposes a yearly opportunity for colleges internationally to compete to design a Heating, Ventilation, and Air Conditioning (HVAC) system on an assigned structure in a remote location. The 2020 Design Calculations project involves calculating the heating and cooling loads on a three-floor, rare archives facility located in Mumbai, India. In addition to rare documents and books, the facility will store and preserve manuscripts, photos, as well as audio recordings, in the facility. ASHRAE codes and standards are provided along with the Owner's Project Requirements (OPR) for the assigned structure, and must be closely followed to remain in compliance with the Competition. In addition to necessary load calculations, an Hourly Analysis Program (HAP) is utilized to calculate the ventilation, heating, and cooling loads on the structure during specified times. Air quality, proper ventilation, and relative humidity are only a few of the considerations that greatly impact the necessary design calculations. A detailed report is required from each participating team, including completed calculations and HVAC system drawings for the entire assigned building. The top submissions will be recognized at the 2021 ASHRAE Winter Meeting, scheduled for January in Chicago.

## Augmented Reality Maintenance

**Tyler Lis, Ryan Lukowski, Aaron Dulniak and Zareya Moore**, ENT 466: Electrical Design II

Faculty Mentor: Professor Leonard Fiume, Engineering Technology

For our group's Senior Design project, we connected with representatives at Kaman Industrial Technologies to build an augmented reality application available for tablets and iPads. This application is being built for Westmatic Corporation, a large-vehicle wash system manufacturer and a customer of Kaman. Westmatic's main problems occur with preventive and predictive maintenance of their vehicle wash systems. Using a picture recognition software designed by Schneider Electric, any operator can take a picture on a tablet or iPad of a Westmatic vehicle wash system, or a smaller section of it, and view "following data" at pre-programmed points of interest. "Following data" consists of the last service date, manuals of the components,

a link to videos on how to replace said component, and any live data pertinent in preventing a malfunction of the system. Westmatic's large vehicle wash systems have multiple control panels, and the status and data accumulated from them are relayed to a programmable logic controller (PLC), also developed by Schneider Electric. This PLC is connected via wireless networking and/or Bluetooth to the application on the tablet/iPad. The application can show all the live data in the correct locations on the system. Our team was responsible for creating the scenes and data points for the Westmatic car wash, including, but not limited to, schematics, video links, data sheets, and live data. The team delivered an augmented reality program for Westmatic and a PLC programmed by the team to simulate live data for a live demonstration of the capabilities of the augmented reality program. Not only will this project be beneficial in preventing vehicle wash system failures and downtime, but also in organizing all the parts, installations, maintenance, dates, and other paperwork that should be filed for these unique systems. Technician and all other position training will also be improved by this project as a result of the simplicity, time saving, and organized software.

## The Baby Car Seat

**Omar Mohamed, Mohammed Alkhalaf and Hamad Alrobayan**, ENT 465: Electrical Design 2

Faculty Mentor: Professor Steven Barker, Engineering Technology

We devised the Baby Car Seat project to solve the issue of young children left unattended in cars in dangerously hot and cold temperatures, which has resulted in several recent deaths. Our Baby Car Seat uses various sensors to detect if a child is left unattended within the car. We use weight sensors (load cells) for weight detection, microcontrollers, and a 70dB RF module to transmit/receive data. Speakers and liquid crystal displays (LCDs) are used as output components. Switches simulate seat belts closing and opening. Our project operates in two parts, corresponding to child and adult driver. We detect whether the child is seated with the seat belt fastened. Information is transferred to the second Arduino by RF transmitter, from which the driver receives data on the child's location by RF receiver. The output is then displayed on the LCD. If the child is seated but the driver is not, the LCD displays a warning and gives the speaker 2.5 minutes before producing an alarm. If both are seated and the child's seat belt is fastened, indicating that the child has not been left alone in the car, no warning will sound. Our anticipated outcome for the project is to prevent harm or death from freezing or suffocation, due to hot car temperatures in summer and cold temperatures in winter. We hope to perform future upgrades so the system may communicate with multiple phones, send text messages, and even in extreme situations call 911.



## Baja NVH Reduction DAQ

**Dalton Meyer, Tom Sayles, Clivens**

**Fresnel and Steven Nguyen**, ENT 466: Electrical Design 2  
Faculty Mentor: Professor Leonard Fiume, Engineering Technology

SUNY Buffalo State College Mechanical Engineering students compete yearly in a BAJA SAE design-build and race competition. The student engineers' goal is to create a single-seat buggy that can drive on all terrains and survive harsh conditions. The vehicle is meant to be reliable, maintainable, ergonomic, and economic for the recreational user market. Our goal is to aid students in their design and testing with a Data Acquisition System (DAQS). To achieve this goal, we programmed an Arduino unit to process data from an array of sensors across the vehicle. Potential locations are welded joints and bolted down devices, as well as various suspension components, in order to create the most balanced ride possible. Another location will be the engine or the oil reservoir. This allows us to determine if the engine's temperature is being properly maintained. Sensors feed data into an Arduino unit, where each sensor is given a specific designation to identify. This is to reduce each individual location of NVH. The Arduino will then record all the data onto a removable SD card which can be transferred to a computer for future viewing and interpreting the vehicle status. This system will allow the mechanical engineers to assist the vehicle needs during the competition.

## Buffalo State MicroGrid

**Kyle Montreal, Nick Celini, Colin Pelton, Rana Abdel-al and Janet Penwarden**,

ENT 466: Electrical Design  
Faculty Mentor: Professor Ilya Grinberg, Engineering Technology

The MicroGrid Project is a legacy project, with our team being the third to work on it. At the beginning of the project, the grid was only partially operational, with only the diesel generator and the wind farm being operational. Throughout the year, we have added a two-house nanogrid, a variable dynamic load, and a battery system to the MicroGrid. We also began work on incorporating a NovaCore RTDS (Real-Time Digital Simulation) unit into the system; this unit allows for much more advanced and realistic simulation abilities. The MicroGrid model that this project represents is one that can be easily scaled up in such a way that researchers can test various scenarios, such as effects of intermittent renewable sources on stability of the systems. This is especially significant as the world continues to move away from fossil fuel generation and moves toward the "green" options that are increasingly available.

## Ceramic Screen Printer Fixture Plate

**Steven Seekins and Michael Bishop**,

ENT 422: Machine Design II  
Faculty Mentor: Professor Jikai Du, Engineering Technology

PCB Piezotronics is a leading manufacturer of piezoelectric quartz sensors, accelerometers, and their associated electronics designed for measurement of force, vibration, and dynamic pressure. Since their formation in 1967, PCB has enjoyed significant success, which has allowed them to expand their offerings to include piezoresistive and piezoceramic sensors. Our design project is intended to update and improve upon an existing screen printing fixture for piezoceramic sensors. PCB uses a device similar to a t-shirt screen printer to enable them to print a metallic piezoelectric slurry on to ceramic parts. The screen printer contains a fixture in which the ceramic part is loaded and allows the printing process to take place. The fixture in use is of a proprietary design, and is in disrepair. The new fixture must be designed to be easily replaceable, efficient, and operator-friendly. This project uses the topics of Machine Design I and II, Material Science and Testing, and Material Processing in the design of this fixture plate and inserts. Our project will be fabricated by PCB in-house, to increase the speed of completion of project and also decrease the potential cost of parts manufactured by a third-party machine shop. The redesign of this fixture is important to ensure that PCB is able to create a consistent product quickly and satisfy customer requirements.

## Choose the Best Airbnb Host in NYC: A Geo-Visualization Project

**Mohammed Alzuwayyid**,

CIS 494: Undergraduate Research in CIS  
Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

This research project focuses on analyzing datasets from Airbnb of New York City (NYC) to answer the following questions. Which hosts are the busiest and why? Is there any noticeable difference in Airbnb reservations in various areas of NYC, such as Queens, Brooklyn, Manhattan, etc.? What are the factors that are attributable to that difference? Is there an increase in reservations between different seasons? What can we learn about different Airbnb hosts located in the NYC areas? This project was developed using Python programming language to do the cleaning, normalizing, visualizing, and analyzing of the dataset. Jupyter Notebook is used as IDE, as well as other libraries like Pandas and NumPy, Matplotlib and GeoPandas. Furthermore, a website with HTML5 coding was developed to visually display the data and the map. The poster presentation describes areas of NYC where the busiest hosts are located and shows the reasons why guests select those hosts, alongside predictions and comparisons about the prices and locations. A website will be developed for

this project to show the map of NYC with the places where most reservations are made. It will also allow users to explore various details such as reviews per month, prices, room types, and reasons for reservations about the hosts who are the busiest. This will help users make educated decisions about their choice of Airbnb hosts in NYC.

## Closed-Loop Speed Control and Protection Circuit for an AC Induction Motor

**Andrew Walkowski, Daniel Breloff and Joshua Evans,** ENT 466: Electrical Design II  
Faculty Mentor: Professor Leonard Fiume, Engineering Technology

This project will solve the dual problem of speed control and motor protection of an unloaded operating Induction motor. A Variable Frequency Drive or (VFD) is used to provide 3-phase AC power to a 1 HP motor. A graphical user interface (GUI) written in the LabVIEW programming language will control the motor speed and direction, as well as monitor the voltage, current, temperature, and actual RPM of the motor shaft. A national instruments Data Acquisition Device or (DAQ) will measure all real-world signals previously mentioned. Four main components comprise this system. First is a VFD enclosure that receives a single-phase input power and outputs 3-phase power to the next enclosure. The Voltage/Current measurement enclosure then uses high-voltage and high-current transducers to measure the VFD output power, converts these signals into a lower voltage to be measured by the DAQ, and passes through the high voltage and high current into the motor. The third enclosure contains the DAQ device, the temperature measurement circuit, the RPM feedback measurement circuit, and four solid state relays and receives the low voltage signals from the Voltage/Current measurement enclosure. The solid-state relays in the DAQ enclosure take program commands to the VFD enclosure to determine motor RUN/STOP and FWD/REV operation. The last component is the Induction motor itself. The RPM feedback circuit is the critical component to allow for a Proportional, Integral and Derivative (PID) control of motor speed. This circuit will accurately measure the motor shaft rotation speed and feed a proportional DC voltage signal into the DAQ, as the program incorporates the signal into its PID loop and varies the analog output voltage from the DAQ device into the VFD to set the user defined speed in HZ. Accurate real-time data from all signals will be displayed and recorded in the GUI to ensure proper system operation. Five failure modes will be monitored by the LabVIEW program. Preset values and control logic from the GUI and solid state relays will disable the output of the VFD should any of the failure modes occur.

## Glycol in High Speed Direct Drive Compressors

**Nicholas Marshall and Emmanuel Jimenez,** ENT 422: Machine Design II  
Faculty Mentor: Professor Jikai Du, Engineering Technology

F.S. Elliott is a global leader in the engineering and manufacturing of centrifugal compressors, with operations in over 90 countries. The company has over 50 years of service and has built a reputation as a friendly and reliable manufacturer. At present, the high-speed direct-drive compressor is a new technique and F.S. Elliott is experimenting with new ideas to adopt this recent technology. An air compressor efficiently converts the energy utilizing a series of stages to compress and cool the air as it continuously flows through the unit. Traditionally, turbine oil is used as a lubricant in a centrifugal compressor. This project is to research the possibility of replacing turbine oil with glycol. Generally, glycol is a chemical typically used in cooling systems for automobiles and air conditioning systems. However, if glycol can be further used as lubricant, it can greatly benefit a high speed direct-drive compressor. The advantages may include an easier internationally shipping experience, more environmentally friendly, and connecting and integrating the cooling and lubricating systems within a compressor to simplify the system design. This project analyzes and compares the chemical and physical properties of turbine oil and glycol, to optimize the compositions of and conditions for such replacement, and decide the cost and feasibility of the replacement.

## LET'S GET DIRTY! Mini Baja SAE Project

**Matthew Suchyna, Matthew Minchen, Seth Britton, Ryan Smoral, Grant Guzek, Adam Glaser, Casey Willer, Evan Shagott, Jerome Allen, Nick Walker, Josh Schaner and Shaun Payne,** ENT 422: Machine Design II  
Faculty Mentor: Professor Jikai Du, Engineering Technology

For the Mini Baja team's Senior Project, the group was tasked with building a Mini Baja car. The vehicle must meet the requirements laid down by the SAE International group, who will be judging our fully finished car based on a strict set of guidelines. The team's goal was to build a car that passes its rigorous inspection. This means there was much at stake as we built this car. Once the car has been fully built, our team will take it to a competition that is attended to by various teams all across the country. There, we will be judged on how our car performs in a series of obstacle courses, culminating with a final endurance race, going head-to-head against cars from every state, with the winner crowned as champions. This feat is not to be taken lightly, for the competition is fierce, with multiple skilled racers. We strive to be able to put together a car that we can shower with champagne and go down in the annals of Buffalo State engineering history.

## Modular Lubrication System for Industrial Air Compressors

**Andrew Brierley** and **Carson Harris**,

ENT 422: Machine Design II

Faculty Mentor: Professor Jikai Du, Engineering Technology

E.S. Elliott is a global leader in the engineering and manufacturing of centrifugal compressors with operations in over 90 countries. An air compressor efficiently converts energy, utilizing a series of stages to compress and cool the air as it continuously flows through the unit. The company's P300+ centrifugal compressor is capable of pressurizing air to 150 psig (pounds per square inch gauge). In order to produce such high pressure, the impeller needs to spin at a high RPM (revolutions per minute). This rotation can generate high internal temperatures in the compressor's gearbox. As a result, a lubrication loop is necessary to supply oil into the gearbox to cool the internal components. The current lubrication loop utilizes individual components such as filters, a heat exchanger, and various check and pressure relief valves connected in-line with tubing. In an effort to simplify the system and to make installation both easier and faster, this project's goal was to design a new modular lubrication system which would not only meet all of the same requirements as the current system, but also need fewer workers and less time to install the system on the compressor. Replacement of a new modular lubrication system should be also easier and cheaper.

## Modular Water Manifold Design with Integrated Valves

**Kyle Griffith-Clay** and **Michael Brignoni**,

ENT 422: Machine Design II

Faculty Mentor: Professor Jikai Du, Engineering Technology

E.S. Elliott is a global leader in the engineering and manufacturing of centrifugal compressors with operations in over 90 countries. The company has dominated the industry that is responsible for manufacturing air and gas compressors over fifty years. E.S. Elliott's compressors achieve the best performance as a result of having the most recent system and aerodynamic technologies. An air compressor efficiently converts energy, utilizing a series of stages to compress and cool the air as it continuously flows through the unit. The purpose of this project was to change the water manifold on the company's P300 compressor to a modular water manifold with integrated valves. The new modular water manifold should be cheaper, plus it will eliminate many connections that are prone to leaking and drastically lessen installation time. For this project, three design alternatives were considered. The computer-aided design Solidworks was used to run simulation to scientifically prove that a new design can function properly. The project goal was to create the best statistical design: a common header was designed/

modeled and materials selected; stresses were examined with finite element analysis (FEA) technique; a cost analysis of old system v. new system was carried out. The finished design will be rapid-prototyped and recommendations will be created for its manufacture.

## Multiplicative Agreement Edge Detection

**Conner Saeli**, CIS 494: Research in Computer Information Systems

Faculty Mentors: Professor Gang Hu, Computer Information Systems and Professor Sarbani Banerjee, Computer Information Systems

The goal for this research was to develop a novel edge detection method. This project originated from studying new edge detection methods using convolutional neural networks. Edge detection provides a global view of an image with the most critical outline. Robust edge detection methods would allow for concrete analysis in image processing. The applications for this are useful in a wide range of fields, from satellite imaging to medical screening. For example, medical imaging results could be examined in batches to detect anomalies without any human intervention. Modern deep neural network-based edge detection methods achieve roughly 80% accuracy, so the intended result was to improve on this baseline. This model is based on a PyTorch implementation of a current edge detection algorithm called Holistically-Nested Edge Detection (HED). HED's approach is to calculate the loss and update its weights using not only intermediate feature maps, but also with a single added result of each feature map called a fusion layer. Instead of adding intermediate feature maps together from the deep network, this approach adopts multiplication into the network. The objective is to extract more information from network layers than possible with existing approaches. By multiplying instead of adding, this project aims to find agreement between intermediate feature maps. This implementation of HED uses pre-trained parameters from the VGG-16 convolutional neural network as a starting point. The datasets used for this project are BSDS500 and NYUDv2, which are public datasets from UC-Berkeley and New York University, respectively.





## Nozzle Flange Connection Design

**Joshua Bonilla** and **Roohullah Maqsoodi**,

ENT 422: Machine Design II

Faculty Mentor: Professor Jikai Du, Engineering Technology

Xylem Heat Transfer is a world leader in heat exchangers. The company makes a variety of heat exchangers such as Braze plate, Gasket plate, and Shell and Tube. One of the company's products is the RoAirTrol air-water separator. The RoAirTrol mechanism is designed to slow down velocity in a liquid system, to allow for air to rise out the system and solids to sink out of the system. Our project's nozzle to flange fixture is designed to preform tack welding processes for changing size connections. The designs for Xylem's newly developed air water separator has connections at the center and, as a result, the geometry of the nozzle needs to be modified when compared to the old system. Through our research and engineering design, we devised a variety of possible designs. We created drawings for the company to manufacture, assemble, and disassemble the fixture. Welding fixtures will be available in different sizes, shapes, materials, and mechanisms based on their operational need. The precision of the fixture plays a major role in manufacturing. The newly designed fixture should benefit the company tremendously, as there is currently no alternative fixture available.

## Off-Market Real Estate Investing: Exploring Data Analytics

**Evin Wheeler**, CIS 494: Undergraduate Research in CIS

Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

There are many real estate investors looking to invest in off-market properties. Many investors have trouble trying to maintain their current properties, as well as finding new good deals, all at once. This research project will help investors to search for these deals and offer them all the information they need to secure a great deal. American homeowners go through foreclosures and lose their homes every day. Instead of their losing everything, the current project aspires to connect them with investors to sell their home; at the same time, the data will offer buyers an opportunity to make a great return on investment. This project was built with Python programming language. The Python modules used in this project Pandas, NumPy, Matplotlib, and Altair. The data input will come from several database sources, including Buffalo City, Erie County Surrogate, Zillow, and Prop Stream Data. These databases contain data related to property and tax records, mortgage information, foreclosure and probate lists, high-equity lists, projected home prices, the actual repair value of the home, and more. The project then cross-references all these lists and corresponding values to predict the likelihood of a homeowner facing foreclosure, possible sales price range, and the profit

percentage of each home. This web-based project may be accessed by investors through the Google cloud platform. My presentation includes key aspects of the project, as well as a presentation of its software design.

## Robotic Arm Design for Heavy Round Disks

**Kevin Vaval** and **Meseret Gebremariam**,

ENT 422: Machine Design II

Faculty Mentor: Professor Jikai Du, Engineering Technology

Xylem Inc. is a large American water technology provider, founded in 2011 as a spinoff from ITT Corporation, that enables customers worldwide to transport, treat, test and efficiently use water in public utility, residential, commercial, agricultural and industrial settings. The company does business in more than 150 countries and has teamed up with the likes of Manchester City athletes to inform the public about the struggle for clean water. Xylem is committed to producing highly efficient water technologies that use less energy, reduce lifecycle costs, and provide environmental benefits to buyers and communities. A Xylem plant experienced an incident involving lifting a final sphere design where an employee was injured. Our team was assigned this project in the hope of avoiding another such accident. The goal was to design an idea or mechanism that can lift a heavy round disk and flip it. The sphere-shaped disks could weigh from 35 to 1000 pounds, with a thickness up to 44 inches. Xylem's employees use the company's current system with a clamp and lift disks at 90 degrees, then turn the surface around. Xylem specified that our design incorporate increased safety and operate without damage to the final product.

## Roll Your Own Crypto: Use Cases for Novel Encryption Algorithms

**Joshua Stover**, CIS 494: Undergraduate Research in CIS

Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

With data breaches on the rise and the looming threat of vulnerabilities in established encryption algorithms inching closer, data security is a growing need. Security must be considered at every step in a piece of software's lifespan, and in every component therein. This research project employs a novel message-digest algorithm that will generate 512-bit, 256-bit, or 128-bit keys from a user selected passphrase. The message-digest algorithm uses a call to the system time to salt the hashes it generates, ensuring the uniqueness of keys even if passphrases are similar. In addition to the message-digest algorithm, it implements a unique symmetric-key encryption algorithm, using that key to encrypt and decrypt files. The software was written in C++ and compiled for use in Windows 10 and Ubuntu Linux. A

simple interface for each platform allows file selection and choice of encryption level. The project was created using Visual Studio Code in conjunction with Qt Creator. My presentation shows machines running the software, encrypting and decrypting data from local and removable disks. I examine the mathematics and the code used by the algorithms, as well as an exploration of use cases. The project aims to show that creating novel encryption algorithms can increase the data security of an organization or an individual without being any more cumbersome than implementing an existing algorithm.

## Server Room Environmental Monitoring and Control

**Thomas Wallen, Brandon Kohn, Farhanul Islam and Tre'Shon Black-Presley,**  
ENT 466: Electrical Design II  
Faculty Mentor: Professor Stephanie Goldberg, Engineering Technology

Our goal was to design and prototype a microcontroller-based system for the monitoring and control of temperature and humidity in a small-scale server room. Our team projected testing the prototype at a site in Alden High School. The environmental data was collected and displayed on a local LCD screen inside the server room as well as transmitted wirelessly to the internet. Control of the temperature and humidity was accomplished by a set of digitally controlled relays that activate appropriate AC appliances when conditions fall out of range. The focus of the project was to build a more cost-effective version of these monitoring systems for smaller scale server rooms. This cost-effective system will help companies save money, as well as help protect their assets. An Arduino microcontroller system drives the application programming to continuously monitor the humidity and temperature of a server room. This is accomplished by using a sensor module (DHT22) available for the Arduino, which displays environmental data on an LCD screen. The readings are available online, using a Wi-Fi module to transmit the readings to a website called ThingSpeak. The Arduino also controls the relay switches for outlets used by AC appliances, such as a dehumidifier and a cooling system to maintain environmental conditions.

## Skip the Line and Get Your Coffee on Time

**Bandar Almutairi,** CIS 494: Undergraduate Research in CIS  
Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

The purpose of this research project was to design an electronic Order Application (App) system for Spot coffee at the Student Union located on the Buffalo State Campus. The coffee shop often has long queues of students during the morning

hours and break times between classes. The large crowd of students gathers before and between classes; they have very little time to pay through the traditional cash register system, which is currently the only payment method available. This project projects automating the current ordering system and offer cashless payments to reduce the staff needed to take orders and payments. The project aims to develop an application for both Android and iOS smartphones so that students can order their coffee and make online payments. This project will also create an App for the coffee shop, through which the order can be processed by its staff. With this App, baristas will be able to visualize cumulative order requests and efficiently service the orders to their customers as they arrive. An “Order Ready” message will pop up on the screens of customers’ smartphones. This project will be expanded to create a website ordering system as well, with the payment system designed for PayPal and credit card payments.

## Using an Internet Extension to Save You from the Internet

**Yousef Abdulrahman,**  
CIS 494: Undergraduate Research in CIS  
Faculty Mentor: Professor Sarbani Banerjee, Computer Information System

The Internet has become a major part of everyone’s present-day lives, potentially engulfing one into its endless abyss of information and entertainment. Some people have become obsessed with the Internet, sacrificing their health as well as time with friends and family, and even becoming addicted. The purpose of this research project was to develop a Google Chrome Extension that monitors time spent browsing on websites like Google, YouTube, etc. It uses JavaScript, HTML and CSS. A user interface was initially created using CSS for a user-friendly view of the Extension. JavaScript is the main programming language used to implement the functionality of the Chrome Extension. It displays warnings every 30 minutes to remind the user to take a break, change posture, or hydrate. It will also send daily, weekly, and monthly statistics of the improvement on time spent on the Internet versus time spent on useful, constructive activities—for example, hours spent watching Netflix compared to hours on educational websites. The web-browser extension displays as an icon at the top of the user’s browser and may be hidden while the user is on the Internet. A pop-up window on the computer appears on the screen to tell the user to take a break, with an inspirational quote to get the user moving. This Extension is projected for publication on the Chrome Web Store site for the benefit of anyone using the Google Chrome web browser.

## Using Oracle APEX to Solve Meetings Issues

**Yasir Alhadeethi**, CIS 494: Undergraduate Research in CIS  
Faculty Mentor: Professor Sarbani Banerjee, Computer Information Systems

In this research project, Oracle Application Express (APEX) was used. APEX is a low-code development platform that enables one to build scalable, secure enterprise apps, with world-class features, which can be deployed anywhere. Oracle Application Express enables users to design, develop, and deploy responsive database-driven applications, either on-premises or in the cloud. Corporate meetings often can be overwhelming when they lack documentation. Searching for files for each meeting can take up unnecessary time due to lack of organization. This project aims to provide a better environment for efficient collaborations, and better facilitation among project team members. The APEX application for this research is used to store data from meetings, including agenda, meeting organizer, assigned presenters, and other attendees. This application contains specific details such as name, description, start and end times, location, presenters, attendees, attachments, action items, decisions, and notes. The user can click a tab and the data about the meetings is then e-mailed to participants using an Oracle client. My project uses a database to store details and information that will be entered and created by future users of the application. This action will be deployed by using database objects like Tables, Views, Indexes, SQL Queries, Shell Scripts, as well as SQL Scripts. My application will prevent users from losing documentations and missing important details of each meeting, thereby enhancing efficient communication.

## Xylem Heat Transfers Manufacturing Coating Improvement Analysis

**Victoire Babwiriza** and **Nathan Moore**,  
ENT 422: Machine Design II  
Faculty Mentor: Professor Jikai Du, Engineering Technology

Xylem Inc., based in Cheektowaga, New York, is in the midst of perfecting multiple daily processes within their manufacturing department. The company tasked our design team with the following issue: How can we maximize the efficiency of the process of applying stop-off paint to various fixtures? The current process involves laying down fixtures on a table and using a paint roller to apply the stop-off application to each individual fixture one at a time. We studied various possible alternatives. Examining painting processes used at other companies gave us the idea to use an automated sprayer, because it possesses the ability of operation without human monitoring and has the capability of painting multiple fixtures at once. However, the solution we ultimately agreed upon is far more straightforward. We implemented the use of a handheld paint sprayer. While it will still require manual operation by a worker, it still has the benefits of an automated paint sprayer. When the fixtures are laid out, the paint sprayer has the ability to paint multiple fixtures at once, and the operator maintains total control over the stop-off distribution as well. Also, a process as simple as this will result in a much lower operational cost, as well as lower initial purchase costs. In order to maintain continuity, other items will be researched, designed, and purchased as well, such as a paint booth for ventilation purposes, and personal protective equipment for employees when operating the proposed system.





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# Education

## Accommodating Students with Disabilities in Higher Education

**Justin Boucher, Iyanna Williams and Roger**

**Geaniton**, CWP 102: Argumentation and Research

Faculty Mentors: Professor Susan Mary Paige, Academic Success Program and Professor Jane E. Sullivan, College Writing Program

The Individuals with Disabilities Education Act (IDEA) has given students with special needs the opportunity to succeed and graduate from high school. All students attending college must self-advocate because they are under the American with Disabilities Act (ADA). Students who have learning disabilities and Autism Spectrum Disorders are intellectually able to learn and succeed at the college level. In addition to the self-advocacy issues students with disabilities may have difficulty handling the stimulation levels and the social skills needed in college classroom environments. College is an academic environment first, but it is important to note that it is also a social environment and these students may find difficulty in (a) self-advocacy, (b) the ability to participate in group projects, and (c) the willingness and preparation of college faculty to make proper accommodations. The steps to integrate students with disabilities into the college classroom are (a) faculty acceptance and (b) peer involvement. Without these two components, the hurdles for the student with disabilities will be greater. How ready are faculty and students for the integration of students with disabilities in their college classroom environment? With prior IRB approval, we will collect data from the faculty, staff, and students at a four-year urban public college considering integration of students with disabilities to (a) determine faculty attitudes and perceptions regarding accommodating students with disabilities and (b) determine the students attitudes and perceptions regarding their willingness and preparedness to interact with students with disabilities in their college classroom.

## Analyzing Opposing Views on Classroom Size in an Elementary Surrounding

**Heather Polowy, Jennifer Casillas,**

**Yesilliam Rivera and Nancy Cruz,**

EDU 201: Introduction to Education

Faculty Mentor: Professor Sandra Washington-Copeland, Buffalo Urban Teacher Pipeline Residency Undergraduate Program

The objective of this investigation is to analyze opposing views regarding classroom size in an Elementary school setting. In this research, you will find classroom size and the ratio of students to teachers is important. The views of teachers' aides and assistants will come into play throughout this project because we will share

some personal experiences from our work in elementary schools. We will also review an experiment called the Project Student Teacher Achievement Ratio (STAR), which presented the effect of three different class sizes on academic performance. When taking a deeper look into an elementary classroom setting, we have learned that there are both advantages and disadvantages to the student/teacher ratio affecting social and learning skills. One point teachers addressed was that classrooms with a large ratio of students have allowed those who are timid and struggle socially, to get lost in the crowd. Some believe that a larger classroom can be enriching because it allows students to work together to help one another and stay on task. Studies have shown that smaller sized classrooms do in fact impact student achievement and the ability for students to understand. This research project is ongoing.

## Bridging the Language Barrier With Music Education

**Amanda Ruiz and Sydney Williams,**

EDU 380: IPDS Italy

Faculty Mentor: Professor Kerry Renzoni, Music

This study concentrates on the connection between music education and English learning. Our research question is "how does music education bridge the gap between language barriers?" Before we left for Italy, we were informed that the citizens of Torremaggiore, the small city we were staying in, would have a language barrier with us, especially at the elementary school we planned to visit. During our time in Torremaggiore, we spent multiple days at Emilio Ricci Primary School working with students between the grades of Pre-K through 5th. We collected a wide variety of data that includes field notes, teacher candidate participant blogs, and personal teaching journals. Our findings indicated that Italian students were fully engaged in all music content, asked questions after music lessons to further enhance their learning, and learned new vocabulary through song and movement.

## Comparing Strategies to Motivate Elementary Children in Thailand and US

**Klihtoo Paw,** Early Childhood/Childhood

Faculty Mentor: Professor Pixita del Prado Hill, Elementary Education, Literacy, and Educational Leadership

As a child, I experienced education in Thailand starting from birth until seven years of age. Then, I started my education at the age of eight in the United States. Since I want to become a teacher, I would like to investigate different strategies teachers can use to motivate children. This study gathered information to learn the similarities and differences regarding this topic between Thailand and the United States to identify what I might use as a teacher. My mentor, Dr. del Prado Hill, and I worked together

to conduct this study. I recruited my subjects from Thailand via email and/or Facebook. I obtained the email/Facebook addresses of the interviewees from a teacher who worked in Thailand and immigrated to Buffalo. I recruited local teachers through contacts available through the Professional Development Schools (PDS) Consortium. The project was verbally and electronically described to the participants in November 2019, consent forms were distributed, and any questions were answered. The email message was available in English and Karen so all possible participants can understand. The participants were interviewed through a list of questions I compiled. I interviewed in person, via phone or via email depending on which method the interviewee chose. The interview was conducted in English and/or Karen depending on the preference of the participant.

### **Current Issues in ESL Education in the Buffalo Area**

**Pyi Phyo Thu and Suesue E. Kie,**

EDU 201: Introduction to Education

Faculty Mentor: Professor Sandara D. Washington-Copeland, Elementary Education

This study explores the issues in English as a Second Language (ESL) education in the Buffalo area. To study those issues, secondary data will be collected from document analysis and record searches. Over the past 10 years, the number of English Language Learners (ELLs) has nearly doubled. These students are from a variety of cultural backgrounds with diverse customs, religions, and languages. According to Buffalo Public Schools, there are about 6,000 ELLs and they represent approximately 84 language groups in Buffalo. A recent Buffalo News article shared concerns of immigrant and refugee leaders who say there are too few bilingual teachers to address the poor academic results seen among so many of these ELL students. Supporting these students can be challenging because many did not plan on attending or finishing school and in many cases, their priority is finding a job to support their family, especially for older high school students. Many ELL students have also faced trauma and have developed social and emotional learning problems. After analyzing the information collected, the preliminary data shows that schools need parental involvement with appropriate language support. Our future research intends to address the issues in ESL education from a holistic approach by including perspectives from teachers, students, parents, community, administrators, and government.

### **Decoding Strategies in American and Italian Schools**

**Alexander Bianchi,** EDU 380: IPDS Italy

Faculty Mentor: Professor Sherri Weber, Elementary Education, Literacy, and Educational Leadership

This study seeks to compare and contrast the way that students use literacy techniques while reading in Italian schools, versus how students perform these tasks in American schools. The research focuses on the use of phonics and decoding systems in the classroom, as well as examining how these relate to the relative fluency and automaticity in each given setting. Data was collected in a qualitative manner, and draws upon first-hand experiences in schools in America, as compared to first-hand experiences from observing Italian classrooms. Travel to Italy will occur during January 2020 and all data on Italian schools will be collected during this time. Post-travel, experiences from Italian schools forms my analysis of how literacy techniques differ or relate between the two areas.

### **Do Educational Practices Suppress the Advancement Black Women in Society?**

**Shavil Rousseau, Sabrina Leveille,**

**Felicia St. John and Sarah Bryant,**

CWP 102: Argumentation and Research

Faculty Mentors: Professor Susan Mary Paige, Academic Success Program and Professor Jane E. Sullivan, College Writing Program

Black women are highly diminished throughout American society. We are passionate women with the personal experience of being a black woman in American society. Our literature review has exposed the struggles Black women endure in the American educational environment. For example studies have provided evidence that (a) having a teacher who is not your race can affect your grades, (b) it is more difficult for a black woman to get accepted to an Ivy League university, (c) the struggles of black female athletes, and (d) the differences in salary and rank of Black female Professors at Historically Black Colleges (HBC) vs Predominantly White Institutions. Our research project would, with prior IRB approval, include interviews with black women working at a four-year urban public college in New York State to learn their views and personal experiences of being a black woman employed in the college setting. We will be replicating a study by Shyanne Gal that focused on the difference in salaries between men and women in higher education. We will use their research model and focus on the comparison between White and Black women in higher education.

## Does All Education Look the Same? Comparing Schools in Italy, Zambia and The United States

**Lauren Roetzer**, EDU 580: IPDS Italy  
Faculty Mentor: Professor Kerry Renzoni, Music Education

This research centers on the question, “How does education compare across different schools and different countries”? I conducted part of this study while participating in the IPDS Italy program in January 2020 as well as the 2018 IPDS Zambia program. Through these two IPDS trips and my own experiences back home in the United States, I was able to compare the different schools that I taught in to find answers. As part of each IPDS program, I observed and taught in elementary, middle, and high schools in Torremaggiore, Italy and Lusaka, Zambia. My observations included different subjects such as ELA, math and music. I took extensive field notes on the classroom environment, resource allocation, student engagement, teaching methods, and classroom activities. My data sources included field notes and blogs of participating teacher candidates. I used qualitative data analysis techniques to review our notes and blogs about what we saw to identify how educational practices differ over schools in the three countries. Findings include how Zambia and Italy are very similar in terms of foreign language education and length of school days, whereas the US and Italy are very similar in terms of resource allocation and classroom management. In regard to differences, all three countries fluctuate greatly between how they treat “special” subjects such as art or music. Additionally, all three have very different practices concerning higher education for students continuing to high school or college.

## The Effects of Hurricane María on Education in Puerto Rico

**Alexander Bianchi**, Childhood Education  
Faculty Mentor: Professor Sherri Weber, Elementary Education,  
Literacy, and Educational Leadership

Since making landfall in September 2017, the effects of Hurricane María have been felt across Puerto Rico. This study analyzes the long-term implications that have been experienced by schools, and what changes have risen as a result. Results showed that positive school leadership in combination with adaptive teaching practices allowed some schools to overcome the hardships they faced. At the same time, the emotional turmoil and loss of resources suggest that full recovery will be an ongoing process. From an educational perspective, this study emphasizes the need to foster resilience in schools, and support trauma-sensitive environments.

## Five or Six Day School Week? The Effects of Schooling on Information Retention

**Tanner McMullen** and **Morgan Orlando**,  
EDU 380: IPDS Italy  
Faculty Mentor: Professor Kerry Renzoni, Music

Does having a six-day school week with shorter daily hours increase student’s information retention? In the United States, we have a five day school week with a two day break. In Italy, students attend school six days a week. Could the two-day break in American schools cause a decrease in student performance? Townsend’s article “Building Academic Vocabulary in After-School Settings: Games for Growth with Middle School English-Language Learners” investigates the effects of an after-school literacy program on students who are English-language learners. In this study, students participated in twenty after-school sessions. By having this extra exposure to the vocabulary, Townsend hoped that it would increase their knowledge. We hoped we would see similar results when working with children at a primary school in Torremaggiore, Italy because of their extra school day each week. Our data sources included teacher candidate participant blogs, personal teacher journals, field notes of classroom observations, and interviews with teachers at the elementary school. We found that the extra day seemed to have a positive effect on students’ information retention. For example, we found that after just a few days of hearing a song in English, students were able to sing songs that we taught them with increased accuracy in both pitch and language each time we came in to teach. Our research shows a preview of our book and the songs taught to our students. As a result of our findings, we believe that the extra six-day school week has a positive impact on student’s retention of information.

## High School to College: How Prepared Were You?

**Charles Onogwu**, **Ariana Johnson** and  
**Muhammed Trawally**, CWP 102: Argument and Research  
Faculty Mentors: Professor Susan Mary Paige, Academic  
Success Program and Professor Jane E. Sullivan, College  
Writing Program

Does high school really prepare first-year college students for all these challenges? Our research examines the perceptions of first-year college students regarding their preparation for college. High school students are told college attendance is an essential part their future success and that their experience is something they will remember all their lives. First-year college students experience a tremendous shift in their education experience and the transition from high school to college is often a jarring experience. Suddenly a student is no longer only concerned with getting a good grade on a test, living away from family and friends, and juggling a challenging course load, all while learning how to self-advocate. On top of this, advisors fail to



mention how the debt connected to attending college is going to affect decades of their lives. Students are not taught enough about how student loans and financial aid work. College tuition can vary significantly and there are many schools with affordable tuition and generous financial aid assistance. However, not all students qualify for assistance because of their family household income. With prior IRB approval, our study selects a sample of convenience of residential first-year college students from a four-year public urban college. We collected data on (a) their high school demographics, (b) how well informed they were about the cost of attending college, (c) how they selected this campus, and (d) their satisfaction with their current college experience.

### How Can an IPDS Teacher Deliver a Science Lesson to Italian Students?

**Mary Valle**, EDU 380: IPDS Italy

Faculty Mentor: Professor Christopher Shively, Elementary Education, Literacy, and Educational Leadership

Teaching English-Language Learners is considered to be “tough” for many teachers, especially when teaching in areas around the world that may not have the tools American schools have. The International Professional Development School (IPDS) program at Buffalo State provides teaching opportunities to future teachers around the world. It enables an American teacher to feel what it is like to be an elementary-school student learning a new language in a new country. Many IPDS teachers prepare elaborate lessons that cannot possibly be completed in the short amount of time they are allowed to teach (typically around 15-20 minutes a day) at the IPDS school. The problems of language and time can be averted using the instructional strategies described in this presentation. With the help of Google Translate, Google Slides, a PhET science simulation, and Readers Theater, teaching students science in a language different from the IPDS teacher’s first language is possible. An hour-long science lesson was designed to be taught in 15-minute increments using Readers Theater. All the materials for the science lesson were translated into Italian, the language of the students from Torremaggiore, Italy. My presentation describes how the science lesson was prepared and how the Italian students reacted to the lesson.



### An Inclusive Perspective of a Student with Significant Disabilities in the General Education Classroom

**Jessica Kubik**,

EXE 364: Educating Students with Severe Disabilities

Faculty Mentor: Professor Lynne Sommerstein, Exceptional Education

This presentation includes the standards and activities of a 11th-grade unit plan that are designed to be adaptable to teach a student with significant disabilities in a general education English classroom. Using a student whose family I have interviewed about many aspects of her life, I have determined the long- and short-term goals that would be best to focus on to allow for more possibilities in her future. The activities for the 11th graders have been developed not only to suit their needs, but will also allow her to meet her IEP goals, while being engaged with typically developing peers of similar age--all while using modified, age-appropriate materials.

### Is the Picture Exchange Communication System (PECS) an Effective Intervention to Increase the Verbal Language of a Child with Autism Spectrum Disorder?

**Sarah Harter**, HON 400: All College Honors Colloquium

Faculty Mentor: Professor Kathy R. Doody, Exceptional Education

The ability to communicate wants and needs to others is an important aspect of communication. Communication is not limited to only spoken language but is also gestural or written. For a child with autism spectrum disorder (ASD), communicating those needs may be difficult. The inability to communicate may lead to frustration which can trigger the demonstration of inappropriate behavior. Researchers often examine the effectiveness of interventions to increase communicative abilities in children with ASD to alleviate frustration. The use of Augmented and Alternative Communication (AAC) devices is one intervention that has been explored. Augmented and Alternative Communication or AAC is used to help children with autism communicate information without the use of speech. One specific type of AAC that is typically used for children with ASD is the Picture Exchange Communication Systems (PECS). PECS is a system that uses the selection of pictures in order to facilitate communication for children with ASD to enhance verbal communication. There is a misconception that the use of AAC discourages, rather than encourages, the use of verbal language in individuals with ASD. Therefore, this literature review will examine the effectiveness of PECS as an intervention to increase the verbal language of children with ASD.

## Math Anxiety and Teacher Candidates

**Lindsey Brzozowski**, Childhood Education  
Faculty Mentor: Professor Dianne McCarthy, Elementary Education

Many childhood teacher candidates at Buffalo State exhibit math avoidance, perform poorly on math assessments, and have a fear math classes. Some of the qualities listed above are characteristics of math anxiety. I investigated if teacher candidates at Buffalo State College experience math anxiety and what the prevalence of math anxiety is within the childhood teacher preparation program. To conduct my research, I sent a survey to the students enrolled in the childhood education program at Buffalo State. My survey was modeled after the Fennema-Sherman Mathematics Anxiety Scale (FSMAS), which is used to measure math anxiety within the context of a classroom (Fennema & Sherman, 1976). A study conducted by Siew Yee Lim and Elaine Chapman (2013) investigated and modified the FSMAS scale to better suit research in mathematics education. Their investigation was administered by using a short twelve-item survey. My survey also contained twelve items. The questions focused on teacher candidates' mathematics abilities, feelings towards mathematics, and ease/comfort teaching the subject. Teacher candidates rated themselves on a scale from "strongly disagree" to "strongly agree." From the 58 responses I received, it is apparent that a percentage of the childhood education teacher candidate population at Buffalo State college exhibit qualities associated with math anxiety. Math anxiety is a growing concern in today's classrooms and future teachers need to be aware of their own anxieties. My goal is to spread awareness about the topic using my research.

## Mathematics Curriculum in Italy and the United States

**Lindsey Brzozowski**, EDU 380: IPDS Italy  
Faculty Mentor: Professor Sherri Weber, Elementary Education

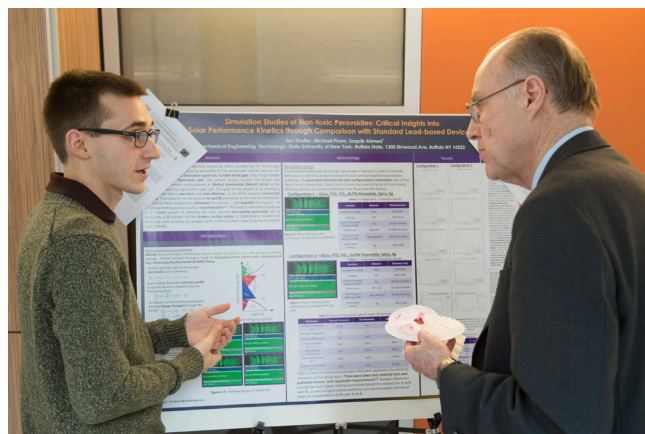
This comparative research project takes a comprehensive look at the mathematics curriculum in both Italy and the United States (specifically, New York State). Before traveling to Italy, I often wondered how their school system would compare to ours in America. Having already completed research on mathematics anxiety, I was chiefly interested in their math curriculum, as it is a subject I am passionate about. The Common Core Mathematics Curriculum is an imperative resource for this study. Our curriculum is viewed side-by-side with theirs in order to gain a wide-ranging view of both countries' mathematics instruction. While in Italy, I had the opportunity to observe mathematics instruction as well as view materials they use while teaching. Preliminary findings show that the mathematics curriculum in Italy is not all that different from the curriculum in the United States. As an educator, it is important to be aware of the

techniques and procedures others use. Doing so will produce more effective teachers. The aim of this poster presentation is to shed light on the similarities and differences between mathematics curriculum, expectations, materials, and pedagogy in Italy and the United States.

## Musically Motivated: A Literacy Experience in Torremaggiore

**Nicholas Stanford** and **Sydney Lauricella**,  
EDU 380: IPDS Italy  
Faculty Mentor: Professor Kerry Renzoni, Music Department

Finding best practices in literacy instruction for English Language Learners (ELLs) is a trending topic within the international education field of research. Many countries are just beginning to incorporate English literacy instruction in their curriculum but lack the educational tools and teacher preparation to do so effectively. Inspired by this need for insight, we based our research around the question "What happens when music is incorporated into English language instruction?" Traveling to Torremaggiore, Italy and teaching for two weeks at Scuola Elementare Emilio Ricci, we were provided the opportunity to incorporate music into literacy instruction organically with students ages 4-10. Working with other SUNY Buffalo State teaching candidates, we created engaging lesson plans combining music and literacy instruction. All teaching observations were recorded in a blog coordinated by the SUNY Buffalo State IPDS program. These blogs provided much of the data on which we based our findings, as well as our personal experiences and interviews we coordinated with teacher candidates who participated in the program to gather what they noticed in their classroom. Through informal assessment, we gathered that combining English literacy with song and movement before diving into direct literacy instruction without music had a positive effect on student motivation, literacy comprehension, and literacy retention. These findings suggest that further research is needed in applying music to literacy instruction, using sound before sight educational methodologies, while working with English Language Learners.



### The Need for Minority Teachers in Urban Schools

**Dierra Jenkins, Carolyn Price and Mark Adams**, EDU 201: Introduction to Education

Faculty Mentor: Professor Sandra Washington-Copeland,  
Buffalo Urban Teacher Pipeline Residency Undergraduate Program

The absence of diversity in K-12 teaching staff is a nationwide problem, especially for urban schools. In Buffalo Public Schools, Black and Latino students make up two-thirds of the enrollment, yet only ten percent of teachers are minorities. Graduation rates are at an all-time low in urban schools, so there is an urgent need to figure out how to solve this problem. Our literature review focuses on the reasons behind the lack of diversity as well as the benefits to students. Studies have shown that when students are taught by people who look like them, they have a better chance of success. For example, having one teacher of color in grammar school greatly increases the chances of African American students graduating from high school and attending college. A recent study found that there has been a significant increase in the percentage of minority teachers; however, retaining these teachers has been a problem. They have left the teaching profession at higher rates than non-minority teachers. Future research will include looking at the reasons why there is a higher turnover rate for minority teachers as well as review initiatives, such as Teacher Pipeline and other programs, that have been put in place to help rectify these problems.

### Please Help Me – I’m a Bully

**Talia Washington, Carmen Spencer and Michael Woods**, EDU 201: Introduction to Education

Faculty Mentor: Professor Sandra D. Washington-Copeland,  
Buffalo Urban Teacher Pipeline Residency Undergraduate Program

Bullying has been a big problem in schools for a long time and affects all students involved—whether they are bullied, bully others, or are bystanders. Numerous studies mostly focus on helping the victim of bullying and programming to stop bullying. Our goal was to approach bullying from a different perspective, through a review of the current literature to find comprehensive strategies that offer help to the bully. More specifically, we explore the perceptions, behaviors, and communication that surrounds students who bully. As educators who work in public schools and see bullying occurring every day, we would like to help identify gaps in the current knowledge in the field. Research has found that many programs to reduce bullying in primary and secondary schools have proven ineffective, although some approaches are more effective than others. Several recent studies have shown that anti-bullying programs can reduce bullying activity and victimization, but this behavior is not being sufficiently reduced.

We are also interested in finding out what types of holistic prevention strategies can be offered to a child to help them cope or deal with their problems and difficult situations. Future research will include interviews with teachers to find out what policies, practices, and programming their school has in place and what they think is missing or should be added.

### The Power of Play in Kindergarten

**Viani Saez-Acevedo and Sonia Bonilla**,

EDU 201: Introduction to Education

Faculty Mentor: Professor Sandra Washington-Copeland,  
Director, Buffalo Urban Teacher Pipeline Residency Undergraduate Program

Our research reviews current literature on the importance of play and includes experts’ recommendations on the amount of time that should be allotted for play in a school day. Play is the engine of learning and a vital force for young children’s physical, social, and emotional development. Through play, children experience empathy, collaboration, problem-solving, leadership skills and kindness. Research studies have found that there is a strong correlation between play and foundational capacities of memory, self-regulation, oral language abilities, social skills, and success in school. However, the current focus has shifted to academics with limited playtime. Children in kindergarten now spend more time being taught and tested on literacy and math skills than they do learning through play and exploration, exercising their bodies and using their imaginations. This shift has caused behavioral problems and difficulty with focusing when learning. As teacher assistants who work in kindergarten, we have witnessed first-hand the toll that demanding academic work has on kindergarteners. Students got out of their seats to move around, had difficulty focusing, were falling asleep, and cried from mental fatigue and stress. Every child deserves to grow and learn in a play-based classroom. Our research is ongoing: future research will include recommendations on ways to incorporate more play in the classroom to complement the academic curriculum.

### Preparing Teacher Candidates for Collaborating with Families

**Brianna Wright**, Childhood Education and **Macy**

**Dorsheimer**, Early Childhood and Childhood Education

Faculty Mentors: Professor Corinne Kindzierski, Elementary Education and Professor Julie Henry, Elementary Education

During the spring semester, we observed and researched the teacher education program to gain insight on how teacher candidates can build their confidence working with families. Going into the field, many future educators are apprehensive about parent-teacher conferences or other interactions with diverse families. Due to this lack of knowledge and expertise in



the field, many new teachers feel as if they need to continuously practice these skills to better communicate with parents. Our research project goals are to find the best method to address any concerns teacher candidates may have regarding caregiver/parent communication and to identify what advice senior teacher candidates can provide for future teachers. We generated a survey for students in the Education program to identify concerns they may have in working with diverse families and inquire about resources available to them. Using the results, our poster promotes suggestions and other ideas to help future teachers feel more comfortable with working with families. This information will positively impact pre-service teachers and their ability to gain the confidence to acknowledge any issues when collaborating with families.

## The Pros and Cons of Common Core Testing

**Dawn Miller, Jeff Turner and Naeemah Wilson-Simmons**, EDU 201: Introduction to Education  
Faculty Mentor: Professor Sandra Washington-Copeland, Director, Buffalo Urban Teacher Pipeline Residency Undergraduate Program

Our research is designed to examine the Pros and Cons of standardized testing and how it affects students, teachers, and parents. Some proponents say standardized tests are a fair and objective measure of student achievement. They ensure that teachers and schools are held accountable to constituents. A research poll by the Associated Press-NORC Center for Public Affairs Research found that most parents say that standardized testing is a solid measure of their child's ability. However, many people feel that the new Common Core testing standards have become increasingly unpopular, since they remain largely untested, riddled with inconsistencies, and are culturally biased. As educators who work in classrooms, we see first-hand how Common Core testing takes away from vital learning time that children need to develop academic, creative, and critical thinking skills that will be needed throughout their life span. Many opponents said they would like to eliminate the testing. Instead, they advocate for alternative methods of testing that may enhance or improve the standards that are already in place. This project is ongoing. Future research will include interviews with teachers to find out their experiences and satisfaction with standardized testing.

## Recess in Schools in the United States, Chile, and Italy

**Kelly Glowny**, EDU 380: IPDS Italy  
Faculty Mentor: Professor Pixita del Prado Hill, Elementary Education, Literacy, and Educational Leadership

Research suggests that recess has positive effects on students cognitively, physically, socially, and emotionally, by providing relief from academic challenges presented by school (Ramstetter, Murray, & Garner, 2010). This project compares recess in elementary schools in Buffalo, New York, Santiago, Chile, and Torremaggiore, Italy by examining what cultural factors contribute to differences in recess requirements, how students and teachers are impacted, and what these differences look like in schools locally and internationally. First, I recruited a classroom teacher locally with ties to the Buffalo State PDS Consortium who allowed me to conduct research in their classroom. In June 2019 and January 2020 I traveled to Santiago, Chile and Torremaggiore, Italy, respectively, where I recruited classroom teachers affiliated with partner universities of Buffalo State and the Buffalo State International PDS Consortium. Data was collected using classroom observations, surveys, and interviews. In the local elementary school, I saw no time to very limited time for recess. In Chile, I saw multiple times where children and teachers engaged in free time throughout the school day. In Italy, students attend school five hours a day for six days a week, which allows for unstructured time to relax or spend time with family or peers. I concluded that students in Chile and Italy are able to pay attention in class and retain information more than students in the U.S. because they have more time to decompress and spend time developing social skills.

## The Role of Silence in Music Making

**Molly Secord**, Music Education  
Faculty Mentor: Professor Kerry Renzoni, Music

This study explores what the role of silence is in music making when a music teacher and a young child engage in musical play. Musical play can include vocal and instrumental exploration, and occurs in both informal and formal music learning environments. When playing musically with young children, teachers leave silence to allow students an opportunity to process their own musical thoughts and create new ideas. Video data of a teacher and young child participating in musical play was collected over a four-week period. Video was analyzed using qualitative analysis procedures. Preliminary findings include the conclusion that leaving silence encouraged child-initiated music making.

### **A Special Ability: Autism at its Best**

**Deliris Rodriguez**, EDU 201: Introduction to Education  
Faculty Mentor: Professor Sandra D. Washington-Copeland, Elementary Education

My project describes Autism Spectrum Disorder (ASD) and is based on a review of the literature, but mainly my personal experiences with my two sons. Sharing my journey will give the reader an authentic illustration of what a person with ASD might look like through a unique lens. Have you ever been somewhere and saw a child screaming or crying? Some people would think that is caused by bad parenting, when there may be something else going on. I like to shift the paradigm and say that some individuals just have a special ability called autism. These super-smart individuals have unique ways of mastering different subjects like reading, writing or even figuring out difficult math problems faster than others. There are different types of symptoms and even different diagnoses. Autism may affect many aspects of an individual's life. There is so much to learn about not only children but also adults. Adults and children socially distance themselves from society due to their different way of thinking. It makes it hard for families to communicate with them, since their brain development is so unique. With a rise in autism spectrum diagnosis, we all need to learn more about this disorder. My future research will focus on developing a case study to help educate others from the perspective of a caretaker.

### **Student and Teacher Relationships in the USA, Chile, and Italy**

**Karly Glowny**, EDU380: IPDS Italy  
Faculty Mentor: Professor Pixita del Prado Hill, Elementary Education, Literacy, and Educational Leadership

My research project compares and contrasts teacher and student relationships in Chile, Italy, and the United States. Due to the USA's relatively small class sizes, I hypothesize that teachers are more likely to build relationships with their students and create a warm and inviting classroom to adapt to each student's needs. The goal is that the teacher works to make the classroom environment comfortable for each student. The teacher validates the student's life, culture, and experience, and school becomes a place in which the student's life and learning can coexist (Hoffman, 2018). The methods used in the research project were a literature review, data collection at a local school site in Western New York, and data collection in schools in Santiago, Chile and Torremaggiore, Italy during my time studying abroad. The data was collected by classroom observation and asking teachers in the three countries what they do to build relationships with students. Data was collected by classroom observation notes and recording teacher responses. The project focuses on the formal and informal interactions that take place between the teachers and students. As I observed, I used the findings to develop probing questions for

the interview that will follow. My poster presentation will share relevant literature, findings, and implications for teachers.

### **Taking LOTE Seriously: Pushing Foreign Language Education**

**Sibgha Haider and Noushin Ahmed**,  
CWP 102: Argumentation and Research  
Faculty Mentors: Professor Dr. Susan Mary Paige, Academic Success Program and Professor Jane Sullivan, College Writing Program

It is a common misconception that speaking English can get you anywhere in the world. In reality, you need a second language even in America to have an advantage in society. In a non-English speaking country, non-bilingual English speakers are completely lost. Foreign languages need to be taught earlier in education, specifically before the age of 10, when the "critical period" of language development ends. Even though evidence in our literature review suggests that learning a second language earlier is very useful in a child's development, many schools in Western New York have pushed foreign language to middle school and grade six despite the research-based evidence. Introducing new languages so late in a child's development is only setting them up for frustration and failure and making it unnecessarily difficult for children to learn a second language. This research project, with prior IRB approval, surveys the 26 school districts that participate in the Erie County, New York Association of School Boards to ascertain when and why these schools are offering foreign language studies in a child's elementary-school years.

### **Teacher Perceptions About Classroom Aesthetics in Traditional and Waldorf Schools in the US and Germany**

**Holly Krupski**, EDU 380: IPDS Italy  
Faculty Mentors: Professor Patricia George, Elementary Education, Literacy, and Educational Leadership and Professor Tamara Horstman-Riphahn, School of Education

The Waldorf education model was founded in Germany in 1919 by Austrian theologian Rudolph Steiner, who believed that educational experiences need to focus on the whole child (thinking, feeling, doing) and must connect knowledge to community. For this study, the researcher spent a full day observing in four classrooms – a second-grade Waldorf school and a third-grade standard public school near Buffalo, New York; and a second-grade Waldorf school and a fourth-grade standard public school in Stuttgart, Germany. Observations were made regarding the aesthetics of each classroom, including colors, materials and organization. Classroom teachers were asked to complete a questionnaire outlining their goals and intent with the classroom design. Photos were collected from each teacher's

classroom and follow-up questions were provided to gain additional information about classroom aesthetics. Through this study, the researcher discovered that German and US traditional schools differ greatly from Waldorf schools. In particular, they differ in regard to the emphasis that Waldorf schools place on nature, soft colors, flexible seating and student independence compared to the emphasis the traditional schools place on a well-structured, organized classroom, bright colors, and themed spaces. Beyond the differences, however, it was clear that teachers at all schools work hard to make sure students feel welcomed, comfortable, and engaged.

### Teacher's View of Physical Activity and Its Effects on Learning

**Andrew C. Sisson**, HON 400: All College Honors Colloquium  
Faculty Mentor: Professor Dianne S. McCarthy, Elementary Education

As a future educator, I have always been focused on the best teaching practices and methods that would lead to the most productive and efficient learning environment within the classroom. Dr. McCarthy and I expect to discover the importance of productive movement or activity throughout the day on students in terms of retaining information. We also expect to uncover how important movement is in the opinions of teachers. There are some students who only participate in physical activity during physical education at school, and those classes may be only once or twice a week. My initial thoughts are that even simple and focused movements and activities in classrooms can have positive effects on learning by increasing focus and retention. Is physical activity worth it for teachers to invest time out of their instructional period? Does it get kids ready and motivated to learn, or would it just be a waste of very limited and valuable time? From my experience, I feel much more productive and motivated after exercise. I feel that it is important to reach that mindset before attempting to learn to maximize educational growth. To research how this idea may or may not be used or valued within the educational community, I use a mixture of teacher surveys as well as uncovering previously published research studies.



### To Play or Not to Play: The Decline of Play Time for Young Children

**Leslie Lawrence** and **Josephine Avarello**,  
EDU 495: Special Project  
Faculty Mentor: Professor Sandra Washington-Copeland,  
Director, Buffalo Urban Teacher Pipeline Residency  
Undergraduate Program

We selected this topic because we work with young children and have observed the positive impact of play in our classrooms. Numerous studies support the importance of play in the classroom for young children because they learn more through play and develop life skills, language skills, self-regulation, and creativity. Current research has found that the decline in children's playtime affects emotional development and has led to various mental health and behavior problems. This project will look at the various types and benefits of play and what kind of play happens during the early stages of development. We briefly discuss why some proponents of academics think formal learning is more important than play. Theorists such as Montessori and Vygotsky who support play, as well those who advocate for academics over play, are reviewed. Our research is ongoing. After our study is complete, we will provide recommendations on creative ways to incorporate more play into academic curriculum to help make playtime more effective.

### What Music Education Method Do You Use?

**Katherine Santoro**, IPDS Italy  
Faculty Mentor: Professor Kerry Renzoni, Music Department

This study focuses on the primary music education methods teachers use in the United States and compares these methodologies to those used in Italy. This research highlights three main methodologies: the Orff Approach, Music Learning Theory, and the Kodaly Method. The Orff Approach is a hands-on approach which uses percussion instruments as a tool for learning. Music Learning Theory, which I noticed is a primary method in the United States, is an aural/oral approach which uses movement, singing and chanting to learn music. Audiation (hearing and understanding music when the music is not present, but may have been present) is a large portion of the Gordon method. The Kodaly Method works with rhythm and pitch. Solfege is also used with this method. I conducted a series of interviews with two teachers locally in Buffalo, New York and two teachers overseas in Torremaggiore, Italy. I asked each teacher three questions: (1) What methodologies have you been trained to use and/ or observed in the classroom (Orff, Kodaly, Music Learning Theory)?; (2) Which methodology do you feel works best in your classroom setting, and why?; and (3) What methodology do you feel does not work in your classroom, and why? I found that a combination of the Gordon Method and the Orff Approach is used in the United States and Italy. This poster describes detailed findings from teacher interviews and my observations in American and Italian music classrooms.



### Why Schools Don't Have Time to Teach Social Skills

**Dolores Rosso, and Tammy Bonner,**

EDU 201: Introduction to Education

Faculty Mentor: Professor Sandra Washington-Copeland,  
Buffalo Urban Teacher Pipeline Residency Undergraduate  
program

Our project is a literature review that looks at the lack of social skills in schools and how it is affecting our students. Social skills are critical to our development and success. Many children never learned these skills at home; however, they are needed to interact and get along with others. Parents assume children are being taught these life skills at school, but that is not always the case. We reviewed the three stages of development of social skills: pre-school, elementary school, and high school. We are all educators in urban public schools and collectively have over 40 years of experience. Our presentation will discuss some of the pros and cons we see daily, along with what we have learned through various research studies. We will also give an overview of the curriculum before the Common Core requirements and how it has changed due to the amount of time spent on academics and testing. We will use our first-hand observations to explain why we feel this is not working and how it impacts our students. Our goal is to make people more aware of the lack of social skills and how it is affecting children. This research project is ongoing. Future research may include formal classroom observations of social skill instruction and student interaction to gain a better understanding of what is going on in the schools we work in.



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## ***Health and Social Work***

### **Acupuncture: An Alternative Medicine for Pain Relief**

**Justine Andrews,**

NFS 330: Integrative and Functional Nutrition

Faculty Mentor: Professor Suk Oh, Health, Nutrition and Dietetics

Acupuncture is a therapy of Traditional Chinese Medicine (TCM) that has been widely used to treat many body dysfunctions and especially pain conditions including headaches, migraines, chronic pain, arthritis and more. The principles of TCM and acupuncture state that the human body and food are made of a balance of yin/yang elements and a flow of energy called Qi. When the balance of yin/yang Qi is disrupted, or a blockage in Qi flow occurs, an illness results. Acupuncture is believed to restore the flow of vital energy called Qi and the balance of yin and yang Qi in the body. With this, life is sustained. According to a CDC survey, approximately 55% of American adults experienced some sort of body pains in the past 3 months. Of these, 17% considered their pain severe. The purpose of my research was to find evidence of effectiveness and safety of acupuncture as a method to alleviate symptoms of illness, such as pain. For this, a literature search and review was conducted on this therapy. Results were collected from studies within the Journal of Traditional Chinese Medicine and other conducted trials. Both true acupuncture and sham (clinical) acupuncture shown non-placebo effectiveness in treating symptoms on a wide range of diagnoses. Trials also determined some conditions may be successful without additional pain medications. Lastly, acupuncture sessions of 30 minutes over multiple days proved most effective in delivering treatment. This poster presents these results and provides the best treatment using acupuncture.

### **Barriers to Access to Care for Mental Health in Trinidad**

**Shayla Rhodes,** SWK 499: Independent Study

Faculty Mentors: Professor Beth Tripi, Social Work and Professor Kimberly Zittel-Barr, Social Work

The research that was conducted for this study in Point Fortin, Trinidad was regarding the barriers for access to care for mental health within their population. The research consisted of a 30 minute interview with a clinician at a mental health facility. Many of the interviewer's questions were very general and open-ended which yielded many results to explain reasons why mental health is not taken as seriously as in the U.S. For example, adults who live in Trinidad are not supportive to family members who have a mental health diagnosis because they view it from spiritual perspective, such as that the individual is possessed by a demon rather than having a mental illness. Doctors and social

workers work together to provide services to this population because they understand the clients situation and do not view their illnesses how other people in their country do. Further interviews and research in this area would be expected to yield similar results.

### **Berries, Onions, and Cruciferous Vegetables: Functional Foods**

**Zachary Collins,** Dietetics

Faculty Mentor: Professor Suk Oh, Health, Nutrition, and Dietetics

Functional foods are those provide additional and enhanced health benefits beyond basic nutrition. Although many foods are purported to have unique qualities, I will be specifically exploring whether berries, onions, and cruciferous vegetables provide a substantial health benefit beyond their nutrient content. Berries contain phytochemicals that are believed to have anticarcinogenic, cardioprotective, and neuroprotective effects. Additionally, depending on berry variety, a number of health benefits—such as treatment of urinary tract infection and control of postprandial glucose and insulin responses—will be explored. Different onion varieties are thought to have a host of benefits ranging from encouraging anti-platelet activity associated with decreased CVD risk, to increasing brown fat ratio, to having inhibitory effects on growth of cancer cells. Cruciferous vegetables—a family of vegetables that include cabbage, broccoli, cauliflower, and kale—contain isothiocyanates that play a role in lowering cancer risk and have cardiovascular benefits. My research is based on review of literature and journals, and will explore current and ever-changing research. I will use also my presentation to debunk and clarify any falsehoods circulating about these particular functional foods. In a world full of inaccurate or misleading health and nutrition information, I will discuss scientifically relevant, peer-reviewed evidence in a way to help better understand functional foods.

### **Can Cancer be Prevented with Food and Dietary Supplements?**

**Kassidy Manke,**

NFS 330: Integrative and Functional Nutrition

Faculty Mentor: Professor Suk Oh, Nutrition and Dietetics

Cancer research has been at the forefront of the medical field for decades now. To many, it seems that this disease is looming over them and their families, waiting to strike at any moment. There have been small bits of hope for families with developments such as chemotherapy and cancer fighting drugs, but these treatments often cause side-effects that are detrimental to the individual's health and sometimes still do not completely eradicate the disease itself. Genetics has been taking the main blame for cancer, leaving individuals feeling more hopeless than



ever in the belief they can do nothing to stop it. However, in more recent years, there have been indications that lifestyle factors have a big impact on the development of cancer. If lifestyle choices are poor, they are much more likely to activate cancer causing genes. This link can be viewed in the relationship between smoking and lung cancer. It has been suggested that by adding more whole foods/plant-based foods into your diet, cancer can possibly be prevented. I will analyze the current research and determine the links between cancer and nutrition that have been discovered in recent years. It seems too simple for many to believe that nutrition could be the key to unlocking the secrets of cancer, but maybe overlooking this simple factor is what has led the medical field down a long, complex and confusing path that has not produced significant results.

### College Health Providers and E-Cigarette Use

**Sally Salzer and Jessica Kulak,**

HEW 495: College Health and E-Cigarettes

Faculty Mentor: Professor Jessica Kulak, Health and Wellness

Background: The use of electronic cigarettes (e-cigarettes) among college students has continued to increase in the United States. College health providers are in a leadership position with an opportunity to counsel and educate students; however, providers have expressed barriers in effectively reducing student use. Objective: Qualitative interviews assessed college health providers' knowledge and attitudes regarding use of e-cigarettes on their campus. Methods: Data was collected from six phone interviews with college health providers in March 2020. A variety of open-ended questions were asked, such as: (1) providers position at the health center; (2) awareness and knowledge of e-cigarette use on their college campus; (3) perceived student knowledge of nicotine in e-cigarettes; (4) reasons students on campus provide for their e-cigarette use and what the college provides as alternatives; and (5) college health provider training preference and current trainings available. Results: All providers acknowledged that e-cigarette use on their campus is a health concern. During traditional health intakes, a question regarding e-cigarette use is asked, but not necessarily followed up on. All providers mentioned a lack of student awareness on the amount of nicotine in e-cigarettes. Two providers mentioned the use of motivational interviewing when counseling students, and one mentioned the use of peer educators as an option on their campus. Conclusion: Results suggest that provider knowledge and access to tangible resources on e-cigarettes would help facilitate smoother conversations with students regarding e-cigarette use. Training on motivational interviewing and implementing peer education programs may be needed to effectively support students on college campuses.

### Domestic Violence in Point Fortin, Trinidad: Gathering Knowledge to Help Protect the Community

**Alicia Scott, SWK 499:** International Social Work Research  
Faculty Mentors: Professor Beth Tripi, Social Work and  
Professor Kimberly Zittel-Barr, Social Work

This study was designed as a qualitative interview study between the researcher and an expert from the Point Fortin, Trinidad community. The study was intended for the researcher to learn more about domestic violence in Point Fortin. This study aims to use information input from an expert to learn more about the experiences of community members experiencing domestic violence. According to Gopaul and Gain (1996), in the Caribbean and throughout the United States, most victims and their families do not report domestic violence when they are aware of it. Therefore, the majority of domestic violence cases are underreported to police, and victims often do not seek or receive support from social service agencies. During my qualitative interview in Trinidad, I learned that domestic violence was seldom addressed as an issue, and although government policies were in place and police were trained, law enforcement did not always follow through with proper procedures. My findings show that women often return to abusers, which is among the reasons that domestic violence is not being addressed sufficiently in Point Fortin. Research with more than one expert and in different parts of Trinidad would be expected to yield similar results.

### E-Cigarette Knowledge Among College Healthcare Providers

**Hannah Voit and Jessica Kulak,**

HEW 495: College Health and E-Cigarettes

Faculty Mentor: Professor Jessica Kulak, Health, Nutrition, & Dietetics

Introduction: Electronic cigarettes (e-cigarettes), or vaping, have become an epidemic in the United States. One of the most common medical facilities for college students to use is the health center on campus. This study aimed to examine the knowledge and confidence of college healthcare providers regarding vaping among college students. Methods: Pilot data was collected within the State University of New York (SUNY) system; 51 college health providers responded, located at 26 colleges in the 64-campus system. The survey assessed demographics, training, and previous e-cigarette exposure or experience, both personal (e.g., personal use of the products) and professional (e.g., participation in trainings). Knowledge of vaping was assessed using several items, including, "Are you confident in relaying the message of your training to your patient/student population?" Response options ranged from "very confident" to "not at all confident," and included a don't know option. Results: Half (52%) of the health providers reported "no" to participating in training



or educational activities related to e-cigarettes. Despite this, participants indicated that they are “very confident” in relaying messages regarding e-cigarettes to patients/students (23%) and to faculty/staff members (13%). Conclusion: Overall, the knowledge being shared about vaping between college healthcare providers and students varies. These findings indicate opportunities for interventions. Proper education on e-cigarettes could allow a universal understanding of vaping for the college community. Future research is needed to enhance the understanding of the knowledge and confidence of healthcare providers in regards to vaping.

## **Healthy Eating Among Low-Income Populations**

**Kisanet Berhe,**

HEW 295: Research Experience in Health and Wellness

Faculty Mentor: Professor Jessica Kulak, Health, Nutrition, & Dietetics

Introduction: Healthy food is more expensive than unhealthy food. There are 23.5 million people (roughly about 20%) in the United States living in low-income communities who live more than one mile from a supermarket. Additionally, in the United States, there are nearly fifty million people who are “food insecure,” making food insecurity one of the nation’s leading health risk factors. Corner stores are more likely to be located in low-income neighborhoods, limiting access to healthy food. My research focused on how to improve eating healthy foods among low-income populations. I hypothesize that if we educate and create programs to help low-income populations to consume healthy food, they will gain and improve their health. Method: A literature review was conducted in March 2020. The key search terms used were “healthy eating” and “low-income populations”. The primary database used to find articles was Google Scholar. Results: As a whole, the literature indicates low-income populations can eat healthy food under budget. If low-income populations are knowledgeable about nutrition and measurement, they can purchase healthy food under budget and still be healthy. Conclusion: Even though low-income populations have a supplemental nutrition assistance program (SNAP) to help them purchase food, they may not always use it to buy healthy food due to the expense. Programs that help low-income populations improve healthy eating might wish to investigate lowering healthy food prices or increasing the price of unhealthy foods.

## **Learning Science and Math through Dance**

**Ke-nijah Holloman-Wilson,**

SWK 499: International Social Work Research

Faculty Mentors: Professor Beth Tripi, Social Work and Professor Kimberly Zittel-Barr, Social Work

My study uses a constructive approach by integrating dance into science and mathematics instruction in order to help pre-schoolers of all learning styles to learn and apply critical thinking and problem-solving skills. The study was intended to train pre-school teachers in Point Fortin, Trinidad to improve their students’ critical thinking and problem-solving skills in science and mathematics studies. Background information pertaining to this topic comes from a Valls, Black, and Lee (2019) qualitative study about what can be learned by integrating dance into science. Valls, et al. found an increase of students’ autonomy as they negotiated cognitive and personal problems, increased comprehension of science concepts, and an increase in students’ motivation and interest in science. In the present study, my “eyeballing” method with data collection showed noticeable increases in teachers’ comprehension of how dance and math connect, as well as understanding of how to use dance as a teaching tool. Future research with a larger sample size would be expected to yield even more statistically significant changes in these areas. The findings of this study include its participants’ viewing dance as a method to teach math and science as a user-friendly, creative, and integrative instructional tool for pre-K students.

## **Managing Anxiety**

**Sadira Brown,** SWK 499: International Social Work Research

Faculty Mentors: Professor Kimberley Zittel-Barr, Social Work and Professor Beth Tripi, Social Work

My research project was administered in Trinidad at the Naomi Chin Kit Memorial School, which is located in a small community. The topic that was discussed was anxiety: specifically, anxiety management. I selected this topic, because the community wanted to learn more about how to manage anxiety when experiencing it in their daily lives. The method I used to carry out the project was a verbal presentation, followed by a discussion activity and data collection. One common theme that emerged from my evaluation of the data collected was that participants were apprehensive about letting others know they experiencing anxiety. Another theme was that those with symptoms of anxiety at pre-test changed their answers post-test, after learning that the psychological symptoms they were experiencing were actually symptoms of anxiety, and that management techniques could be learned to address them.

### **Marijuana Usage as Related to Depression in Teenagers and Young Adults in the United States?**

**Marissa Montroy, Daniel Jarzynka, Keitaya Taylor and Sayry Arzu,**

CWP 102: Argumentation and Research

Faculty Mentors: Professor Susan Mary Paige, Academic Success Program and Professor Jane E. Sullivan, College Writing Program

Marijuana, otherwise known as “weed,” is a natural psychoactive drug used for medical and recreational purposes. Marijuana consumption among young people is on the rise all over the world, particularly in America. There is evidence indicating that nearly a quarter of students who reach 12th grade have tried marijuana. The effectiveness and safety of marijuana has been highly scrutinized by doctors, researchers, and journalists, sparking a national debate over whether or not it should be legalized for all citizens. Those who argue against marijuana legalization claim that the drug can cause or worsen serious mental health problems such as depression, anxiety, and schizophrenia, in addition to a number of other adverse health effects. Those who argue for legalization say that cannabis is a completely safe and natural medicinal and recreational substance. This research project collected demographic data on first-year students’ academic standing in an urban four-year public college program compared with their marijuana usage. With prior IRB approval, we formed a participant sample of convenience of participants who (a) tried marijuana; (b) report the frequency of their usage; and (c) indicate the amount of the drug used consumed. A second group was comprised of first-year students who do not use. Our findings compare the group data with students’ current academic standing.

### **Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) Diet: Can It Prevent Alzheimer’s Disease?**

**Jenna Cully,** NFS 330: Integrative and Functional Nutrition  
Faculty Mentor: Professor Suk Oh, Health, Nutrition, & Dietetics

Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) Diet: Can It Prevent Alzheimer’s Disease? Alzheimer’s disease is an irreversible, progressive brain disorder that slowly destroys memory and cognition abilities and, eventually, the ability to perform the simplest of tasks. The purpose of my research is to find if certain foods or diet can prevent the disease. A first symptom of the disease includes mild memory loss, progressively followed by more advanced symptoms such as changes in behavior and impaired motor skills such as speaking, swallowing, and walking. Is there a way to cure, prevent, or manage Alzheimer’s disease? After a literature review,

I found that there is currently no known cure for the disease, but research has been conducted to determine whether diet can reduce risks of the disease. Dietary supplements like omega-3 fatty acids, vitamin B12, and folic acid have been tested, but research has not been able to find any evidence of prevention or cure. However, research with the Mediterranean diet or Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diet show that both have been scientifically proven to decrease one’s risk of developing the disease. In typical Alzheimer’s cases, people have a reduced cortical thickness and increased amyloid plaques. By following the Mediterranean diet or the MIND diet, brain metabolism can remain stagnant and cognitive decline can slow substantially. Alzheimer’s cannot be cured, but following one of the stated diets can possibly prevent the disease if followed through a majority of one’s life, or prolong the onset if started in adulthood.

### **Mindful Meditation for Mind, Body and Soul**

**Kelly Steurrys,**

NFS 330: Integrative and Functional Nutrition

Faculty Mentor: Professor Suk Oh, Nutrition and Dietetics

Mindful meditation has been used for years to reduce anxiety, stress and depression. Mindful meditation is an ancient spiritual practice that came from the eastern part of the world and is a component of Buddhism. There have been many studies that have shown that people who use this mediation have had reduced symptoms of anxiety, stress and/or depression. The main purpose of this type of meditation is to focus on one thing, then become mindful of the accompanying feelings and sensations. An example of this is focusing on your breath and how it feels breathing in and out while noticing how your abdomen moves as you breath. Just by focusing on your breath, you begin to relax. There are many different exercises a person can use to practice mindful meditation. Some exercise are even specific to what you want to use mindful meditation for. In my studies of mindful meditation, I have found there has been much success in the reduction of anxiety, stress, or depression. The purpose of this research is to observe the effects of mindful meditation on anxiety, stress, and depression. I use clinical studies that explain research performed through clinical trials, the different data collection methods employed, and corresponding results.

## **Omega-3 Fatty Acids: A Healthy Mind and Body**

**Sophia Osmond**, NFS 330: Integrative and Functional Nutrition/HON 400: All College Honors Colloquium  
Faculty Mentors: Professor Suk Oh, Health, Nutrition and Dietetics, Professor Drew Hemler, Health, Nutrition and Dietetics and Professor Andrea Guiati, Modern and Classical Languages

Omega-3 fatty acids have been found to be imperative to a healthy mind and body. Sources of omega-3 fatty acids can be found in fish and fish oils, and in some plants such as flax and chia seeds. Alpha linolenic acid (ALA) is the omega-3 fatty acid present in plant sources. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are long-chain polyunsaturated fatty acids found in fish that provide the most benefit to human health. ALA is the precursor for EPA and DHA in the body. The latter two play important roles in smooth muscle contraction, blood pressure, platelet aggregation and thrombosis, and inflammatory response as prostaglandins in different cells. In addition, DHA is present in the retina and brain and influences brain development and function. Recent nutrition research highlights the importance of adequate consumption of omega-3 fats to promote reduced inflammation and thrombosis, and to support cognitive function and vision acuity. For a healthy body, consumption of omega-3 fatty acids has been found to influence the body's inflammatory response, platelet aggregation, cardiovascular disease risk, and to provide a complementary treatment for rheumatoid arthritis and reduce the risk of adverse effects of pregnancy. For a healthy mind, consumption of omega-3 fatty acids has been found to be essential for fetal brain development and a child's cognitive performance, general mental health, and treatment of cognitive diseases and disorders. In summary, omega-3 fatty acids play an important role in prevention, treatment, and function of numerous aspects of the mind and body.



## **Preseason Fitness of Division III Male Soccer Players**

**Sydney Littlejohn**, HEW 495: Special Project  
Faculty Mentor: Professor Leah Panek-Shirley, Health and Wellness

Assessments of Division III athlete's fitness levels are essential for coaches to design appropriate training programs. Ineffectively targeted training programs may limit a team's ability to perform well during the season. However, there is limited comparative data specific to Division III athletes. The aim of this study was to provide comprehensive data describing fitness levels of Division III male soccer players across two winning seasons. Preseason, male soccer players were assessed for anaerobic capacity and power, muscular strength, muscular power, cardiorespiratory fitness, and body composition. Testing modalities included Wingate, handgrip dynamometer, Margaria-Kalamen, Bruce protocol, waist-hip ratio, BMI, and bioelectric impedance with segmental analysis. On average, the athletes had 23.4 kg/m<sup>2</sup> BMI, 12.7% body fat, and 53.7 ml/kg/min VO<sub>2</sub>predicted. Coming into two winning seasons, the team was rated "above average" and "superior" across all fitness domains. These values begin to build a benchmark for other Division III male soccer teams. Future research conducted on Division III athletes will offer comparative data post-season and off-season, and provide applications for female athletes and other sports such as lacrosse, hockey, and football.

## **Using Meditation to Relieve Stress in Trinidad**

**Cleo Gallagher**, SWK 499: International Social Work Research  
Faculty Mentors: Professor Kimberly Zittel-Barr, Social Work and Professor Beth Tripi, Social Work

Residents in Point Fortin, Trinidad are currently experiencing community-wide stressors following the recent closure of Petrotrin, a company that employed many residents in the area. I hosted and led a workshop open to the public in which members of the community could sign up to voluntarily participate in a session of progressive muscle relaxation and guided-imagery meditation. The session itself took about twenty minutes. Pre-test and post-test evaluations were administered to see whether the workshop relieved stress and tension for participants. Another goal was to gain insight into how the participating people of Point Fortin viewed this technique after completing the workshop. While the sample size was small, quantitative results include that 60% of participants reported their muscles felt tense before the workshop, while 0% reported that their muscles felt tense after. 60% of participants felt at ease before the workshop, while 100% felt at ease after. Qualitative findings show that overall, participants found the technique informative and would be interested in it becoming available more often.



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# Mathematics

## Analysis of Transportation Rates of New Markets

**Xianglin Kong**, Applied Mathematics

Faculty Mentor: Professor Joaquin Carbonara, Mathematics

Transportation rates are involved in the management of almost all large enterprises, and they are an important part of cost considerations. Calculating and forecasting transportation rates can play an important role in the future planning of an enterprise. The development of enterprises has put forward higher requirements for logistics, distribution and cargo storage, which requires the establishment of more advanced and scientific distribution center solutions. In this project, we use Python, the historical data of the enterprise, and established various models to calculate the transport rate and accurately depict transportation rates in new regions. My project focuses on less than truckload (LTL) transportation mode and analyzes the relationship between each factor to draw formulas. The parameters of the models were determined and compared. Then the model with the best fits was found and corresponding predictions were made.

## Finding Optimal Transportation Rates in New Regions

**Lewen Yin**, Applied Mathematics

Faculty Mentor: Professor Joaquin Carbonara, Mathematics

The purpose of my project was to predict transportation rates in new regions for existing business models. In the current market, many supply-chain models exist to support managerial decisions - expansion, closure, acquisition, and organic growth. In most cases, the current state is not optimal in terms of cost, efficiency, or service. Network modeling enables us to diagnose the current state and examine what alternative scenarios might look like. Currently, Rich's has transportation rates for existing markets. They need to expand their major Distribution Centers (DCs). They have historical transportation rates into those markets for the weight brackets and transportation modes (Truckload TL, Multi-Stop TL, Less than Truckload LTL, Intermodal IM) that they use. When they do network design problems and try to assess if there should be a new DC added, they have historical transportation rates to use for the potential lanes. So, we need to use data analysis methods and the historical rates to predict costs for new lanes. Rather than using the straight market rates, we run a comparison between historical rates and the market rates from TransPlace for the same lanes, to get a ratio, such as 1.1 or 0.87, depending on mode. In this project, we focus on the MSTL mode (Multi Stop Truck Loads), and we use

Python to process data analysis and prediction. Then we discuss how to create a better approach for calculating the ratio for the optimization of urban transportation. We first need to create a better approach for calculating the ratio, then we need to explore differences in high density lanes (frequency of shipments), variations in load size, and market regions (urban to rural and vice versa). Finally, we incorporate external data (population density, employment rate, etc.) into the prediction.

## The Models for the Average Number of Applicants at Ivy League Schools

**Gretchen Mann**, Applied Mathematics

Faculty Mentor: Professor Bruce Swan, Mathematics

Within the past couple of decades, attending any one of the eight Ivy League schools has been increasingly more competitive and the admission rates have been declining year after year. This is primarily due to more prospective students applying than in previous decades. While the average number of students that an Ivy League school accepts in any given year is approximately consistent, the average number of applications received has been trending positively. As a result, the average admission rates for Ivy League schools have been gradually declining since 2003. By using SPSS and creating a multivariate time-series regression model, my project forecasts the average number of Ivy League school applicants for the 2020-2021 academic year. Other potential time-dependent variables will be introduced too, such as the total number of high school graduates, SAT and ACT scores, average grade point average (GPA), mean parental income, average financial aid package awarded, and average indebtedness after graduation. Potential models were created based on these predictors, using stepwise regression methods such as forward selection and backward elimination. The ultimate goal of this paper is aimed towards choosing and analyzing a best-fit model, based on the criteria of how significant it is at predicting the average number of applicants and how the optimal model fits compared to other potential models. Multicollinearity between the regressor variables was also analyzed in the models.



## Predicting Rich's Transportation Rates of Unknown Markets

**Boya Zhang**, Applied Mathematics

Faculty Mentor: Professor Joaquin Carbonara, Mathematics

Rich Products Corporation (also known as Rich's) is a privately held, multinational food-products corporation headquartered in Buffalo, New York. The problem of predicting transportation rates is receiving considerable attention with the establishment of new markets in the United States and Canada. Expanding new markets requires the creation of a new distribution center (DC), and its associated cost of transportation to the point of delivery. The goals of this project were to: (1) analyze historical transportation rates in the south-east and south-central regions; (2) determine appropriate weight brackets and transportation modes (Truckload: TL; Multi-Stop Truckload: MSTL; Less than Truckload: LTL; Intermodal: IM); and (3) use Market rates from the TransPlace database to predict transportation rates for new markets. The current project focuses on TL transportation.





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## ***Physical Geography and Sciences***

### **Determination of Sex from Patella Measurements in African American and European American Populations**

**Eric Frauenhofer**, INS 495: Independent Project  
Faculty Mentor: Professor Julie Wieczkowski, Anthropology

The objective of this research was to derive discriminant functions from patella measurements to determine the sex of adult human skeletal remains in African American and European American populations. The sample consisted of 400 individuals (100 females and 100 males of African ancestry; 100 females and 100 males of European ancestry), ranging in age from 18 to 89 years old, from the Hamann-Todd Osteological Collection, a documented human skeletal collection at the Cleveland Museum of Natural History. Seven measurements were taken of each individual's left patella. If this bone exhibited an abnormality, the individual's right patella was measured instead. The measurements taken were the maximum height, maximum width, maximum thickness, heights of the lateral and medial articular facets, and widths of the lateral and medial articular facets. Statistical analyses showed that each measurement was sexually dimorphic, and males had higher mean values than females for each measurement for both ancestries. Demarking points were established for each measurement and then applied to the sample for sex determination. The overall accuracy of this method ranged from 71% to 81% and 66% to 84% for African Americans and European Americans, respectively. Due to these low accuracy rates, using demarking points associated with patella measurements should be used with caution in forensic contexts. SPSS will be used to derive discriminant functions from the patella measurements. It is expected that discriminant functions will be more accurate than demarking points to classify sex, which would be consistent with the literature.

### **Differences in Age at Death Between Foreign-Born and Native-Born Male Individuals Aged 20-65**

**Viviana Angeles Ruiz**,  
ANT 418: Seminar in Physical Anthropology  
Faculty Mentor: Professor Julie Wieczkowski, Anthropology

Previous studies have been conducted on longevity and survival rates. In the United States, it was found that black foreign-born males were expected to have the longest life expectancy at 18.73 years after the age 65 (Dupre, Gu, & Vaupel, 2012). Based on these results in males above the age of 65, I asked the question if there would be a similar discrepancy between foreign-born and native-born individuals aged 20-65.

My research took a look at age at death in foreign-born and native-born male individuals aged 20-65 who are buried at Forest Lawn Cemetery in Buffalo, New York. I hypothesized that male individuals buried at the cemetery who are foreign-born would have a higher mean age at death than native-born individuals. Data was collected at the Margaret L. Wendt Archive and Resource Center. A total of 100 records that met my criteria were collected from the years 1895-1900 from Death Register E with dates from 1894-1902. The individual's name, place of birth, date of death and age at death were recorded. As a result, the mean age at death for foreign-born male individuals was 53.9 (range=25-67; SD=10.2). The mean age at death for native-born males was 37.4 (range=20-65; SD=12.4). Furthermore, place of birth had a large effect on age at death of the individuals. In conclusion, foreign-born male individuals between the ages of 20 to 65 had a higher mean age at death than native-born male individuals from 1895-1900.

### **Effects of SUMO Chain Signaling on Mitosis**

**Lila Toczek, Brianna Gawronski and Michael Ciepluch, Jr.**, BIO 495: Special Project-SUMO Chain Signals  
Faculty Mentor: Professor Xiang-Dong Zhang, Biology

Small ubiquitin-related modifier proteins (SUMOs) are reversibly conjugated to various protein substrates and regulate many different cellular processes including DNA damage repair, ubiquitin-dependent proteolysis, and the cell cycle progression. SUMOylation represents an essential mechanism in control of target proteins' activity, stability, and interaction with other protein molecules. Among three SUMO paralogs expressed in mammalian cells, SUMO2 and SUMO3 are 96% identical (thereby referred as SUMO2/3), but their identity to SUMO-1 is less than 50%. In contrast to modification of protein targets largely by monomeric SUMO1 in vivo, SUMO2/3 are attached to protein targets in forms of both monomeric SUMO2/3 and polymeric SUMO2/3 chains. Although SUMO2/3-specific antibodies are able to detect both monomeric SUMO2/3 and polymeric SUMO2/3 chain signals, rather than SUMO1 signals, on their target proteins using immunofluorescence microscopy, no approach is currently available to monitor the polymeric SUMO2/3 chain signals in vivo. Here, we developed a novel approach for analyzing polymeric SUMO2/3 chain signals by transfecting cells with the DNA construct encoding GFP-tagged four tandem SUMO-interacting motifs (SIMs), which display a specific high-binding affinity to polymeric SUMO2/3 chain signals, instead of monomeric SUMO-2/3 signals, followed by analysis of the transfected cells using immunofluorescence microscopy. We demonstrated that GFP-SIMs detects polymeric SUMO2/3 chain signals largely concentrated at the midbody of the intercellular bridge in cytokinetic cells with a defect in



resolution of the chromosome bridge. Particularly, we elucidated that the polymeric SUMO2/3 chain signals are present in the central section of the midbody, called Flemming body, using the antibodies specifically recognizing the different midbody proteins, including ANCHR, Vps4, Aurora B kinase, phosphorylated Aurora B kinase at Threonine 232, and Plk1 kinase.

### Forensic Anthropology and Your Smartphone: Establishing a Biological Profile

**Eric Frauenhofer**, Forensic Chemistry  
Faculty Mentor: Professor Douglas Ridolfi, Chemistry

A goal of forensic anthropology is determining the identity of human remains, which can be achieved by establishing a biological profile (that is, determining the sex, ancestry, stature, and age-at-death) of the remains. This can sometimes be a straightforward process by assessing non-metric traits of the skull and pelvis. More often than not, however, that is not the case as remains are often incomplete and poorly preserved. Under these circumstances, a profile can be estimated using measurements from a single bone or even bone fragments. However, these methods often rely on mathematical formulas that can be difficult to utilize and interpret. For this reason, forensic anthropologists have developed software for practitioners to enter raw measurements and estimate a profile. One commonly used program, however, is expensive (~\$395 per copy) and is limited to Windows computers. Therefore, my research project focused on developing a free app for iPhone and iPad devices that can be used in the field to estimate a biological profile (not including age-at-death) using accepted metric methods and user-supplied measurements. The app can be used by selecting an aspect of the biological profile, selecting a method, and entering measurements directly into the app, which will then perform the calculation and interpret the result (e.g., male versus female) in accordance with the selected methodology. The app also reports the standard error for the applied method. This app may supplement current software used in forensic anthropology.

### Intraspecific vs. Interspecific Competition

**Laquesha Phillips**, BIO 495: Special Project  
Faculty Mentor: Professor Robert Warren, Biology

The research question that I studied is whether an invasive species has a negative or positive effect when it is introduced to a native species in an environment, and if this interaction has an effect on intraspecific and interspecific competition. Invasive species are non-native species that are not native to a given environment and may have a positive effect or negative effect on the ecosystem. Native species are native to an environment or habitat and thrive in that ecosystem. These

species can be affected by the introduction of a new species; for example, invasive species that can produce a negative effect on the ecosystem. My project focus is important because these invasive species have the potential to destroy the ecosystem that we depend on to carry out multiple actions, such as purifying the air we breathe, cycling nutrients, and also pollinating crops that we eat. Cycling nutrients is essential because it connects the living with the living, the living with the nonliving, and the nonliving with the nonliving. This is very significant because all organisms in an ecosystem are dependent on each other and it is key for the living to survive. The techniques that I used to carry out the project were to maintain multiple plots of invasive species with invasive species, invasive species with noninvasive species, and noninvasive species with other noninvasive species. In this way, we could test the effects of noninvasive species with invasive species, noninvasive species with noninvasive species and invasive species with invasive species. My observations are that when seeds from a different country, when introduced in the same plot to another seed from a different country, for the most part do not both successfully germinate; only the seeds from a specific country flourish. Also, when seeds are placed in the same plot together, one seed typically thrives better than the other. The presentation includes my hypothesis formulated before I carried out the experiment, background information on the experiment, description of methodology, results, and my conclusions.

### Invasive Mussels in the Great Lakes: Impacts and Interactions

**Sonya Bayba**, Great Lakes Environmental Science  
Faculty Mentors: Professor Lyubov Burlakova, Great Lakes Center, Professor Alexander Karatayev, Great Lakes Center and Professor Robert J. Warren, Biology; Susan Daniel, SUNY-Buffalo State Great Lakes Center; Elizabeth K. Hinchey, United States Environmental Protection Agency

Invasive dreissenid mussels have altered the flow of energy in numerous non-native freshwater systems by diverting nutrients from deep to shallow benthic food-webs; thus reducing resources available to deep offshore benthos. While the effect of the nearshore-dwelling *Dreissena polymorpha* (zebra mussel) on benthos has been studied thoroughly, little is known about the deep-water impacts of *Dreissena rostriformis bugensis* (quagga mussel), a species that can live at depths > 200m. In the last two decades quagga mussels outcompeted zebra mussels and have been colonizing previously uninhabited deep lake regions. The goal of this study was to compare lake-wide benthic communities in the presence and absence of quagga mussels, and to investigate whether the positive impacts observed in the nearshore benthos can also be found in the offshore benthos due to the recent deep water quagga mussel colonization. Benthic survey data collected under the Cooperative Science and Monitoring Initiative from Lake Michigan in 2015 and Lake Huron in 2017 were used in

this study. Using non-parametric multivariate analysis, we found that the taxonomic structures of benthic communities without *Dreissena* were significantly different than those with *Dreissena*. Using generalized linear mixed models, we also found that increasing *Dreissena* abundance/biomass had a positive effect on total benthos abundance/biomass, despite the increase in depth. Our results indicate that quagga mussels facilitate both littoral and profundal benthic communities.

## Long-Term Spatiotemporal Trends of PM<sub>2.5</sub> in Mountainous Areas based MAIAC

**Shuang Liu**, Geography

Faculty Mentors: Professor Tao Tang, Geography and Planning and Professor Wenji Zhao, Capital Normal University

The North China Plain has been suffering from severe PM<sub>2.5</sub> pollution in recent years. A series of measures have been taken to improve atmospheric conditions. An accurate assessment of the spatiotemporal characteristics of PM<sub>2.5</sub> levels is crucial to design effective air pollution control policy and obtain the trend of PM<sub>2.5</sub> levels. At present, the research on estimating PM<sub>2.5</sub> concentrations has focused on urban agglomeration in plain areas and has largely ignored mountainous areas. In this research, the mountainous region of Mentougou in Beijing was selected as the study area as it has 98.5% of its area covered by mountains. Multi-Angle Implementation of Atmospheric Correction (MAIAC) AOD and ground-based PM<sub>2.5</sub> measurements were used to estimate PM<sub>2.5</sub> concentrations in Mentougou for 2014–2017 at 1 km resolution through a stepwise regression model. According to the estimation results, we analysed the spatiotemporal characteristics of PM<sub>2.5</sub> and key influence factors. Annual PM<sub>2.5</sub> concentrations decreased by 15.69% from 2014 to 2017. Average PM<sub>2.5</sub> concentrations in winter decreased by 33.64% from 2014 to 2017. This proves that the adjustment of energy structure in winter has achieved significant results for improving the atmospheric environment. Moreover, the PM<sub>2.5</sub> level is the highest in winter, while it is the lowest in summer. The PM<sub>2.5</sub> level is higher in east area, while it is lower in west area. This spatial distribution pattern is mainly affected by terrain. The long-term PM<sub>2.5</sub> prediction filled the gaps left by ground monitors, which would support relevant decision-making and studies.

## Magnetic and Magnetocaloric Properties of Al<sub>1.1</sub>Fe<sub>1.85</sub>Mn<sub>0.15</sub> (M=Mn,Cr)B<sub>2</sub>

**Devanshi Malaviya**, Computer Information Systems, **Elaha Hashmatullah**, Physics, **Md Sakhavat Hossain Himel**, Computer Information Systems, and **Mahmud Khan**, Computer Information Systems

Faculty Mentor: Professor Arjun Pathak, Physics

Materials that exhibit ferromagnetic/antiferromagnetic to paramagnetic phase transitions around room temperature also demonstrate interesting functionalities, including magnetocaloric effects, a property that can be exploited in a magnetic refrigerator. Magnetocaloric compounds that are constituted of abundant and non-toxic elements are especially appealing to realize the commercialization of magnetic refrigeration technology. AlFe<sub>2</sub>B<sub>2</sub> is one such material that was initially reported by Jeitschko et al. (Acta Crystallogr., Sect. B: Struct. Sci, 25 (1969) 163). Recently, a large magnetocaloric effect near room temperature (Tan et al. JACS 135 (2013)9553) was reported for the material. While AlFe<sub>2</sub>B<sub>2</sub> is a ferromagnet with T<sub>c</sub> = 282 K, analogous AlM<sub>2</sub>B<sub>2</sub> alloys with M = Mn or Cr do not show magnetic ordering up to 400 K (J. Solid. State.Chem., 224, 52, 2017). It is, therefore, interesting to explore the magnetic and magnetocaloric properties of partially M doped AlFe<sub>2</sub>-xMxB<sub>2</sub> system. Here, we present a study on the effect of physical and chemical pressure on the magnetic, magneto-transport, and magnetocaloric properties of Al<sub>1.1</sub>Fe<sub>1.85</sub>Mn<sub>0.15</sub>B<sub>2</sub>, Al<sub>1.1</sub>Fe<sub>1.85</sub>Cr<sub>0.15</sub>B<sub>2</sub>, and Al<sub>1.1</sub>Fe<sub>1.85</sub>Mn<sub>0.08</sub>Cr<sub>0.07</sub>B<sub>2</sub> materials by magnetometry with and without hydrostatic pressure, and transport measurements. A detailed presentation of the experimental results is provided and discussed.

## Phase Transition, and Magnetic Properties of Mn-Based Intermetallic Compounds

**Prayushi Bhorania**, Computer Information Systems, **Jackson Kubik**, Physics, and **Mahmud Khan**, Computer Information Systems

Faculty Mentor: Professor Arjun Pathak, Physics

The coupling between structural and magnetic transitions is a paramount key for designing the materials that exhibit multifunctionality. During such coupling, a substantial change in magnetization occurs in the vicinity of phase transition leading to a sizeable caloric effect, a useful property for cooling, refrigeration, air conditioning, and heat-pumping applications. One of the significant challenges of the research related to magnetic refrigeration is the designing of potential materials consisting of earth-abundant as well as non-toxic elements, which gives a large caloric effect at the lower applied magnetic field. Recently, the magnetic and thermodynamics properties of several MnTX (T = transition metal X = p block elements)

reported, which showed a martensitic structural transition from a low-temperature TiNiSi-type orthorhombic phase to high-temperature Ni<sub>2</sub>In-type hexagonal phase and exhibited a significant caloric effect (Samanta et al., APL 101, 242405, 2012). However, most of the earlier studies reported the compound exhibit significantly large thermal and magnetic hysteresis, an unwanted characteristic for application, or they contain expensive elements such as Ge, In, or Ga. Here we present phase transition and magnetic properties of Mn<sub>1-x</sub>Fe<sub>x</sub>NiSi<sub>1-y</sub>X<sub>y</sub> alloys, which are abundant, non-toxic, and the synthesis method is relatively easy and cost-effective.

## Proximity and Grooming Behaviors in Golden Lion Tamarins

**Sheana Ramcharan,**

ANT 322: Research Methods in Primatology

Faculty Mentor: Professor Julie Wieczkowski, Anthropology

For primates in captivity, it is important to maintain natural social organization, which meets the social needs of the animals and can keep them healthy, as they are no longer in their natural environment. *Leontopithecus rosalia* (golden lion tamarin) are monogamous primates. In golden lion tamarins, studies have found that the males are more responsible for maintaining proximity to the female and for grooming the females more often. I studied a pair-bonded couple of golden lion tamarins in the Eco-station exhibit at the Buffalo Zoo in order to understand the roles that grooming and proximity play in their monogamous relationship. Thirty-minute focal animal samples were used to record proximity, and behavior every one-minute and 10-minute all occurrences samples were used to record approaching and leaving events. Results indicated that the adult male, Lua, groomed the adult female, Matea, more often (72.4 % of the time) than she groomed him. The results also reflected that Lua was more responsible for maintaining proximity to Matea (+36 on the Hinde Index scale). This knowledge of the relationship between the male and female golden lion tamarins is useful for maintaining their health while in captivity. By understanding how and why the male is more responsible for the relationship between the pair-bonded tamarins, we can place them in suitable environments that meets the needs of them being in proximity and grooming.

## Proximity Relationships Between Gorilla Mothers and Their Offspring

**Kelly Strong,** ANT 322: Research Methods in Primatology  
Faculty Mentor: Professor Julie Wieczkowski, Anthropology

Western lowland gorillas (*Gorilla gorilla gorilla*) have slower life histories compared to other animals. Life history traits are flexible and can vary depending on factors such as resource availability. For this reason, captivity has a significant impact on developmental milestones like weaning and age at first reproduction. Understanding this influence on life history is key to identifying significant developmental stages, such as when a juvenile becomes a subadult. Mother-offspring relationships change drastically, particularly regarding proximity, as the offspring grows up and transitions between age classes. This study examines gorilla offspring at the Buffalo Zoo and their proximity relationships with their mothers. Additionally, this study investigates the different behaviors that gorilla offspring engage in and how this might change depending on their age and company. I observed three gorilla offspring in different age classes in order to further understand their proximity relationships with their mothers. The offspring are the subadult Amari, the juvenile Nyah and the nursing infant Kayin. They are nine, six and three years old, respectively. Data was collected using a 30-minute focal animal sample, followed by a 10-minute ad lib/break. My results show that Kayin spent the most time in proximity to his mother and Amari spent the least time in proximity to her mother. For the greatest percentage of time, Amari did not have a nearest neighbor. Kayin's nearest neighbor was usually his mother. Kayin also engaged in the widest variety of behaviors while in proximity to his mother and Amari engaged in the least.

## The Relationship Between Historic Redlining Maps and Water Quality

**Mary Valle,**

GES 460/529: Environmental Field Methods and Analysis

Faculty Mentor: Professor Elisa Bergslien, Earth Science and Science Education

Water quality data is available for several different bodies of water across Western New York. For this project, the data that is publicly available over the internet will be compiled to provide a general overview of the state of local bodies of water, particularly with respect to chemicals that are harmful to human health and ecosystems. Some of the chemicals of particular concern are Aluminum, Ammonia, Arsenic, Barium, Cadmium, Chloramine, Chromium, Copper, Fluoride, Lead, Nitrates, and Mercury. These chemicals have been proven to cause acute and chronic effects on the human body. Acute effects are effects that occur within hours or days after a person is exposed. Chronic effects occur after continuous exposure to these contaminants over the course of many years. Information on all of these contaminants



may not be available for every body of water, which is also useful information as it will show where there are gaps in our knowledge. The available data will be compiled graphically and then this information will be compared, wherever possible, to the historic Redlining Maps created by agents of the federal government's Home Owners' Loan Corporation between 1935 and 1940 in order to determine if there is a relationship between water quality and the classification of the surrounding neighborhoods, with the prediction that the most contaminated bodies of water will be associated with a lower assigned neighborhood 'quality' grade.

### **The Response of the Buffalo River to Perturbations Related to a Multi-Year Environmental Dredging Project**

**Skyler Paternostro**, Earth Sciences

Faculty Mentor: Professor Jill Singer, Earth Sciences and Science Education

The Buffalo River discharges into Lake Erie near the upper end of the Niagara River. The lower 9.2 km of the river has been designated as a Great Lakes Areas of Concern (AoC) because of a number of environmental impairments including contaminated sediments. As the river undergoes remediation in order to be delisted as an AoC, a management decision was made to remove the most contaminated sediment in an environmental dredging project that took place between 2011 and 2015. To verify the volume of sediment removed from each dredge cell, the United States Army Corps of Engineers (USACE) annually conducted high resolution bathymetric surveys. GIS ArcMap was used to create DEM layers for the period spanning 2010 to 2017. Bank-to-bank cross-sectional profiles both within and outside dredge cells were created using tools in ArcMap. These GIS tools have allowed me to examine DEM layers using a single polyline. After exporting these polyline data into Excel, the X, Y, and, M (elevation) values are being used to create graphs representing the channel profiles. Using Excel, we are able to calculate sediment changes from year-to-year allowing me to make interpretations about deposition/re-deposition of sediment, sediment erosion, and slumping of sediment from the edges of the dredge cells. This study should provide a temporal record that spans the period before, during, and after the environmental dredging project to document how channel geometry changed as a result of sediment removal and how the river has responded since this perturbation. My findings can also offer insights into how other urban rivers might respond to similar disturbances.

### **S.T.E.M. Education**

**Brooke Federko**, HON 400: All College Honors Colloquium  
Faculty Mentor: Professor Robert J. Warren, Biology

As a biology student, I have noticed many things about the education system, especially the way the sciences are taught. I have been inspired by some awesome educators to become one myself, and aspire to become a high-school biology teacher. Most kids are brought up through elementary and middle school with plenty of exposure to reading, spelling, multiplication and division, whereas most sciences, such as biology and physics, are neglected and aren't touched on until later on in their educational career. With the number of career opportunities in any science, technology, engineering, or mathematical field (also known as STEM), teaching kids about this material at a younger age would benefit us as a society. Kids could find their niches earlier on, and subsequently take on apprenticeships or internships to get started on the career they want (or find they don't want) to dedicate the next fifty or so years of their life to. In America, we tend to push high-schoolers into furthering their education and going to college. However, our high schools do a poor job at preparing kids to attend these institutions we urge them so strongly to attend. These young adults are just thrown into the real world, with no formal education on how to file and pay taxes, maintain a budget, or any other skill essential in our contemporary society. With aspirations of becoming an educator, I want to revolutionize the way we teach kids not just about STEM subject matter, but valuable life skills, as well.

### **A Spatial Analysis of Toxic Release Sites in Buffalo, NY and Socioeconomic Characteristics of Surrounding Neighborhoods**

**Cecilia Pershyn**,

GES 529: Environmental Field Methods and Analysis

Faculty Mentor: Professor Elisa Bergslien, Earth Sciences and Science Education

Buffalo built its economy by being an industrial powerhouse throughout the second half of the 19th century. In its heyday, Buffalo was home to a booming shipping industry, grain mills, steel & iron plants, and numerous other factories. Businesses & manufacturers were drawn to Buffalo for its prime location at the end of the Erie Canal and on the Great Lakes. Although Buffalo has seen a decline in manufacturing over the decades, many industries, especially those whose manufacturing processes are water-intensive, continue to operate in Buffalo. Many of these facilities pose an environmental threat by releasing toxic chemicals into the air or water surrounding their sites. The communities in close proximity to these facilities are at risk of exposure to environmental contaminants. According to historic redlining maps, most residential areas surrounding industrial

zones were characterized as “definitely declining” or “hazardous” as they were made up of working-class, non-white or foreign-born individuals and families. A spatial analysis of toxic release sites in Buffalo will be conducted to determine which geographic areas of the city are most at risk for exposure from contaminants released from these sites. Data from 2010 census zip codes will be used to conduct an inquiry of socioeconomic characteristics in at-risk neighborhoods. Educational attainment, annual income, homeownership and race will be used to determine which demographic is most at risk for exposure from toxic substances releases as reported in the TRI. At-risk neighborhoods will be compared to the historical 1937 redlining maps of Buffalo to determine if these areas predominantly fall in “hazardous” or “definitely declining” characterized neighborhoods. Finally, the 2010 census data from at-risk neighborhoods will be compared to socioeconomic characteristics from the 1937 redlining maps to determine how the demographics of these neighborhoods have changed over time, with the prediction that neighborhoods that were deemed “hazardous” or “definitely declining” in the redlining maps are the ones still at risk for toxic substance exposure in contemporary times, and that the socioeconomic characteristics have not significantly changed over time. The importance of this study is to determine how historically disadvantaged neighborhoods may still be at risk for exposure to environmental contaminants, which has environmental justice implications that should be considered as Buffalo undergoes its economic resurgence.

### Study on The Conformation of Oligo-Arylureido Peptoids

**Gregory O'Brien**, Independent Study, **Patrick Parnel**, Biology, **Kanwal Asif**, Forensic Science and **Victoire Grace-Karambizi**, Biology  
Faculty Mentor: Professor Sujit Suwal, Chemistry

The arylureido peptoid isobars undergo distinct fragmentations in MALDI-TOF mass spectrometry depending on the relative substituents disposition around the benzene ring. Using two commercially available chlorophenylisocyanate isobars, recently we demonstrated the synthetic compatibility of arylureides on the solid support and proposed SS1 and SS2 fragmentation mechanisms. The compounds isolated from the pool of libraries were successfully identified using mass spectrometry without isotopic labeling or internal molecular encoding. To this point, we extended our study towards the synthesis of oligoarylureides using 2-chlorophenylisocyanate submonomer, which results in 1, 2 di-substituted arenes having urea backbone. Due to ortho-substituent disposition in the molecule, we hypothesized the resultant oligomers could potentially adopt secondary structure, similar to polyproline helix. To affirm our hypothesis, we synthesized a series of arylureides--

trimer to nonamer, without any synthetic challenges. The purities of the compounds are determined by HPLC and authenticated using LC-MS. Under MS condition, the compounds larger than pentamer showed enough stability without undergoing significant fragmentation. Based on this evidence, we presumed the arylureides that are larger than pentamer possibly exist in unique 3D conformation that prohibits the molecular fragmentations under LC-MS. To confirm the structures of the oligomers, we further carried out molecular modeling of oligomers and corroborate our evidence by NOESY experiment.

### Surface/Subsurface Soil Contamination Levels and Past Uses of Recreational Parks in Buffalo, New York

**Dylan Putnam** and **Nicolo Alagna**,

GES 460: / 529: Environmental Field Methods and Analysis  
Faculty Mentor: Professor Elisa Bergslien, Earth Sciences and Science Education

For this project, publicly available surface/subsurface soil sample analyses from different recreational parks throughout Buffalo were looked at to determine the different contaminants within the soil and compare the parks to each other. All parks had been previously exposed to contaminants and comparisons were made between the parks to see which sites were safest, which sites had gotten better, and if any sites had gotten worse. The selected parks that were fit best for comparison were Franczyk Park, Trinidad Park, Boone Park, Diarsenol Co., Kingsley Park, and Houghton Park. These parks were all registered under the Environmental Restoration Program, are all in residential/commercial areas, and all had previous uses. The contaminants of highest concern are those known to have an impact on human health such as arsenic, lead, chromium, and copper. The available data will then be compiled into graphs and compared to historic Redlining Maps created by the agents of the federal government's Home Owners' Loan Corporation between 1935 and 1940 in order to determine if there is a relationship between the soil quality of the parks and the classification of the surrounding neighborhoods, with the prediction that the most contaminated parks will be associated with a lower assigned neighborhood 'quality' grade.



## Swelling Induced Dye Uptake in Normal Rat Kidney Cells

**Kalina Rice**, BIO 498: Honors Research

Faculty Mentors: Professor Derek Beahm, Biology and Professor Stephen Thompson, Biology

Cells actively regulate their volume to maintain normal function. Osmotic challenges will cause net water movement across the plasma membrane such that cells swell in hypotonic solutions and shrink in hypertonic solutions. Cells respond to volume changes by activating different channels and transporters to move ions and small molecules across the membrane to restore normal volume. We show that cell swelling under reduced external calcium conditions increases the membrane permeability to a small fluorescent molecule, Lucifer Yellow, in Normal Rat Kidney (NRK) cells. Fluorescence microscopy was used to show that Lucifer Yellow is excluded by cells in normal isotonic conditions but enters cells in hypotonic solutions. This swelling induced dye uptake is shown to be calcium sensitive, and only occurs under reduced external calcium levels. There are several different types of channels that could account for the transfer of Lucifer Yellow, including connexin and pannexin hemichannels formed by gap junction proteins and/or volume-regulated anion channels (VRACs). A pharmacological approach was used to help identify the channel by assaying dye uptake in the absence or presence of drugs known to block certain classes of channels. Preliminary data shows that probenecid, a drug thought to be effective in blocking pannexin channels but not connexin channels, did not block dye uptake whereas drugs used to block hemichannels, such as carbenoxolone and oleamide, do block the dye uptake. However, these drugs may also affect VRACs and so further testing using a larger panel of drugs will be needed to help identify the channel responsible for swelling-induced dye uptake in NRK cells.

## Synthesis of Amino Acid Surrogates Using Buchwald Hartwig Amination

**Mahmuda Rahman**, Chemistry, **Gregory O'Brien**,

Independent Study, **Christa Baker**, Chemistry and

**Victoire G Karambizi**, Biology

Faculty Mentor: Professor Sujit Suwal, Chemistry

Buchwald–Hartwig amination (BHA) is the palladium-catalyzed coupling of amines and aryl halides. The synthetic utility of BHA stems primarily due to the shortcomings of other aromatic C–N bond formation methods, that often suffer limited substrate scope and functional group tolerance. BHA is widely used in organic synthesis to create a variety of molecules that have medicinal and pharmaceutical essence. In this prospect, we explored BHA towards restructuring several heterocyclic halides into highly functionalized amino acid surrogates that could fuel syntheses of novel peptidomimetics having better pharmaceutical

indices. Most importantly, these building blocks allow us to design conformationally constraint oligomers that are cell-permeable, proteolytically stable and potentially offer high-affinity protein ligands. To date, we are successful in synthesizing more than a dozen amino acid surrogates. Currently, we are optimizing solid phase syntheses of hybrid peptides/peptoids that contain surrogate amino acids. Also, we are exploring the MS-based sequencing method that can deconvolute subunits within the oligomers.

## Temporal Changes in the Morphology of the Buffalo River Resulting from Environmental Dredging

**Jennifer Fornell**, Geology and Chemistry

Faculty Mentor: Professor Jill Singer, Earth Sciences

The Buffalo River is classified as a Great Lakes Area of Concern (AoC). This designation reflects the industrial legacy of the river that includes bottom sediments contaminated by heavy metals and organic compounds. Efforts to restore the Buffalo River and de-list it as an AoC requires the impairments to the river to be remedied and that, in turn, has led to a large scale environmental dredging project that took place between 2011 and 2015. This project resulted in the removal of >1 million cubic yards of contaminated sediment from the lower 9 km of the Buffalo River and Ship Canal. Side scan sonar surveys were conducted prior to the start of the multi-year dredging effort (2005, 2009, and 2011) and annually thereafter (2012–2019). These surveys provided an opportunity to investigate the effects of dredging on the morphology of the river channel, and in particular the destruction and reformation of sedimentary structures. Side scan sonar data were processed using Chesapeake Technology's SonarWiz7. A field of sedimentary furrows, first identified in the early 1990's, persisted until it was largely removed by dredging activities. Preliminary interpretations of the 2018 and 2019 side scan sonar data suggest that only a few furrows either survived and/or reformed in the years since that section of the river was dredged. The effects of dredging and the disturbance it makes to the river bottom is also being documented. This research provides an opportunity to document temporal changes in the morphology of the Buffalo River before, during, and after the end of the environmental dredging project. These findings will advance our understanding of how the Buffalo River is adjusting to channel widening and deepening due to the removal of the contaminated sediment.



## **UAV Near Infrared Remote Sensing for Crop Growth Monitoring**

**Hutong Fan**, GEG 518: Remote Sensing

Faculty Mentors: Professor Tao Tang, Geography and Planning and Professor Lei Deng, Capital Normal University

Nowadays, precision agriculture becomes more and more important in agricultural production. Remote sensing techniques are always used in precision agriculture to promote the productivity of crops. Although satellite-based remote sensing has been a popular method for monitoring the earth's surface, it has several drawbacks. With the improvement of drone technology, an unmanned air vehicle (UAV) is more flexible in terms of deployment, monitoring small areas, and cost effective on data collections. In this project, the first objective is to merge the UAV images of the vineyard. There are two kinds of images, RGB and near-infrared. For the near-infrared images which cannot be merged automatically using Pix4D photogrammetric software, Photoshop software was used to conduct the preliminary synthesis. The second objective is to combine both RGB and infrared images into different layers radiation bands of one image and to use NDVI (Normalized Difference Vegetation Index) to analyze the growth situation of grapes in the study vineyard. This research demonstrated that it is feasible to use Photoshop software to mosaic the images that cannot be merged in Pix4D. However, further studies are need for the accuracy issues of both spectral and locations. The significance of this study is 1) finding the alternative method to merge the near-infrared images, and 2) using the NDVI to analyze the growth conditions of the grapes in the study area.

## **Western Lake Erie Algae Bloom Analysis Applying Satellite Remote Sensing**

**Xuejing Hu**, GEG 518: Remote Sensing

Faculty Mentor: Professor Tao Tang, Geography and Planning

Recently, the algae blooms in western Lake Erie has aroused people's concern, which can cause the death of marine lives, the pollution of drinking water, the decline of fishing and tourism industries, and other problems. With the growing frequency and magnitude of algae blooms, it has been becoming a public health and ecosystem hazard. In this research, remote sensing satellite images were collected through the United States Geological Survey, including the Landsat images of western Lake Erie in the summers of 1989, 1999, 2008, and 2019. Remote sensing software ERDAS IMAGINE was utilized in pre-processing the images, extracting algae bloom area, and conducting NDVI classification to study the spatial distribution and temporal variation of algae blooms. NDVI is used to assess whether the target being observed by remote sensing contains living green vegetation or not. The NDVI classification results show that the algae blooms of western Lake Erie has the regional occupations and seasonal changes. From 1989 to 2019, the lake algae spread from the west to the middle of the lake. By 2019, the area of algae has increased significantly. With the increase of summer temperature, the coastal lake algae also increased significantly. The algae are mainly clustered on the southern coast, west coast and southeastern bay of west Lake Erie, but there are no significant algae blooms on the eastern part of the west Lake Erie. The major influence factors for the algae blooms in western Lake Erie are temperature changes during recent years, human activities, and farming.



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## ***Psychology and Social Sciences***

### **The Agreement between Different Raters for a Developmental Screening Tool**

**Kymerlin Enright**, PSY 499: Independent Study  
Faculty Mentor: Professor Pamela Schuetze, Psychology

Developmental screenings are used for the early identification of young children for developmental delays or concerns. Although many screening tools are designed to be used by caregivers who are familiar with the child, in reality they are often completed by teachers or other professionals. To date, there is no information about the reliability between caregiver and professional ratings on widely-used developmental screening tools. Thus, the purpose of this study will be to examine inter-rater reliability for developmental screening of young children. Parents of the children at Buffalo State Child Care Center will be asked to screen their own children using the Ages and Stages Questionnaire. Buffalo State students who have been extensively trained will also screen the children separately to examine inter-rater reliability between the parents and trained administrators. A poster describing the study and results will be prepared to be shared at SRCC.

### **The Association between Temperament and Aggression in College Students**

**Erika Burgasser**, PSY 495: Special Project  
Faculty Mentor: Professor Kimberly Kamper-DeMarco, Psychology

Temperament is an important variable that is continuously researched and associated with both positive and negative pathways of development and is thought to continue into adulthood. Temperament has been found to be made up of different factors such as, effortful control, extraversion, sensitivity, and negative affect (Davis et al., 2018). These factors are examined and measured in the Adult Temperament Questionnaire (ATQ; Derryberry & Rothbart, 1988) and the focus of the current study. However, rarely have researchers examined how these factors differentially relate to the forms of aggression. Aggression can be comprised of both relational and physical forms in which there is harm imposed. Relational aggression is when harm is being inflicted on the given relationship (i.e. removal of the relationship). While physical aggression is the physical acts of harm (i.e. kicking, hitting, biting, punching, etc.). Both have been adverse effects on the overall well-being of college students (McCormick et al., 2015). We hypothesize that individuals who use relational aggression may have an easier temperament, meaning that those with an easy temperament

are more flexible and can adjust quickly, while those who use physical aggression may have a more difficult temperament. In the current study, college students will complete online questionnaires assessing temperament using the ATQ (Derryberry & Rothbart, 1988) and aggressive behavior using the Self-Report of Aggression and Social Behavior Measure (SRASBM; Linder et al., 2002). Data collection is currently ongoing. Analyses will examine correlations and regression analyses regarding study variables.

### **Black Power in Trinidad: Resistance in the Diaspora**

**Aniyah Williams**, Africana Studies  
Faculty Mentor: Professor Marcus Watson, Africana Studies

My presentation topic is the Black Power Movement in Trinidad. With an autobiographical connection to Trinidad myself, I have been enthusiastic about learning of my brave and game-changing Afro-Caribbean heritage. My project provides details about the history of Trinidad's Black Power Movement, including its origins in the intersectional race and class discriminations on the island, racist confrontations faced by Trinidadian students in Canada, and the street protests in Trinidad itself. My presentation expands research into the African Diaspora and contributes to intersectional perspectives on race and class.

### **Can Recency be Overruled: The Effects of Repetition on Jury Decisions**

**Brittany-Ann Monahan**, Psychology and Early Childhood Education, **Sean Clark**, Psychology, **Umme-Salma Amir**, Psychology, **Marnee Hales**, Psychology and **Cassandra Lewandowski**, Psychology  
Faculty Mentor: Professor Naomi McKay, Psychology

Recency is the effect by which the last few stimuli in a sequence are remembered stronger compared to previous stimuli. Repetition is the idea that repeated stimuli will increase salience. No studies have applied these concepts to a definitive jury decision for a criminal court case. The current study looked to see if the repetition would contribute to a jury decision as much as the recency effect. The hypothesis was that participants would base their verdict on the arguments heard most recently or those that were repeated. There were a total of 41 participants enrolled in a psychology course at SUNY Buffalo State, aged from 18-50. Participants were required to make an innocent or guilty decision based on their impression of a fictional court case, in which the defendant was being charged with manslaughter in the second degree. Participants were randomly assigned to one of six groups based on the order that the passages were read: Pro/Con, Con/Pro, Pro-Pro repeated/Con, Con/Pro-Pro repeated, Pro/Con-Con repeated, Con-Con repeated/Pro. During the 30-minute waiting



phase between each side's statement, participants completed a demographics questionnaire and were allowed to sit quietly, but couldn't use any electronics. After all the statements were read, participants were asked to give a verdict of innocent or guilty. To measure the effect of recency we compared verdicts between pro first and con first groups using a chi-square. Results showed that there was a trending difference between the two conditions ( $p=.06$ ); in which jurors put more importance on the information read to them last. When measuring repetition we ran a chi-square between the four groups, Pro/Con, Con/Pro, Pro repeated, con repeated and found no significance ( $p > .1$ ).

## Coming Out and Sexual Behavior

**Taylor Romanyk-O'Brien**, PSY 499: Independent Study  
Faculty Mentor: Professor Kimberly Kamper-DeMarco, Psychology

The proposed research seeks to understand how the age at which one comes out impacts their risky sexual behavior. Researchers have found that men are more unsafe with their sexual behavior in the beginning stages of "coming out," perhaps because they have a limited idea of what it means to be gay and as such, focus on expressing themselves sexually (Joseph et al., 1991). Herek & Greene (1995) found that men who did not feel comfortable labeling themselves as gay or bisexual have a more difficult time requesting and engaging in safe sex and perceive more obstacles to do so. Men who were "more out of the closet" (i.e., more comfortable with their sexual identity) to heterosexual friends saw fewer difficulties related to having safe sex (Herek & Greene, 1995). However, little research has examined whether age is an important predictor for risky sexual behavior within the LGBTQ+ community. For the current study, 100 self-identifying gay and lesbian adults in the Buffalo area were given a Qualtrics survey measuring their risky sexual behavior, as well as additional factors such as internalized homophobia, LGBTQ+ community involvement, and sexual minority stressors. Our central hypothesis is that there will be a positive correlation between the age at which one comes out and their risky sexual behavior. Specifically, we hypothesize that younger members of the LGBTQ+ community who are "out" will engage in fewer risky sexual behaviors.



## Cortisol Levels Blunted After Eating Palatable Foods

**Cassandra Lewandowski** and **Kristin Czajka**,  
PSY 295: Stress and Food-Hormones  
Faculty Mentor: Professor Naomi McKay, Psychology

When people are stressed, they tend to be more inclined to eat highly palatable foods compared to when they are not stressed. This being the reason why there is a link between stress and obesity. What we do not know is why humans are more inclined to eat unhealthy foods. The purpose of the current study is to find out if the cortisol response is blunted after a person eats an unhealthy food item and if there is a difference based on the participants weight class. In this experiment, participants come into the lab and have their weight and height taken. Then they provide a saliva sample to get their baseline level of cortisol. After a waiting period, they give a second saliva sample then move into their stress or non-stress condition. For the stress condition, participants go through a laboratory stressor while the non-stress condition consists of reading a magazine for ten minutes. Next, they give another saliva sample and are given their food condition which is either a high-fat/low-carbohydrate, low-fat/high-carbohydrate, or no food condition. A saliva sample is then collected after and a recovery period follows where one additional sample is collected. The expected results are that the cortisol response will be blunted after eating a food item, with more cortisol being blunted in the high-fat food group. The current study will advance knowledge on the topic of how food can change cortisol levels in humans after going through a stressor.

## The Effect of Physiological Stress on Melatonin Levels

**Michael Brzyski** and **Marnee Hales**,  
PSY 499: Independent Study  
Faculty Mentor: Professor Naomi McKay, Psychology

The cortisol awakening response can be identified by a surge in cortisol levels 30 minutes post-awakening and a steady decrease in melatonin levels during the day. Melatonin is said to be unrelated to cortisol levels in relation to sleep offset. Currently, however, no studies have looked at how a stressor could influence melatonin levels. The present study hypothesizes that melatonin levels will decline following a stressor. Participants were asked to be 12 hours fasted prior to their appointment. When participants arrived, height and weight were measured, followed by the insertion of an intravenous catheter (IV). Following this, two blood samples were taken prior to and immediately following a mock job interview. After blood samples were collected, plasma was stored in a freezer for future analysis. Each sample will be analyzed for melatonin using an enzyme-linked immunosorbent assay. It is believed that there will be a decrease in melatonin levels from the pre-stress sample to the post-stress sample.



## Effects of Familiarity and Prime Type on Memory for Song Lyrics

**Michelle Bass** and **Erika Burgasser**,

PSY 389: Human Memory

Faculty Mentor: Professor Stephani M. Foraker, Psychology

Human semantic memory contains general world knowledge accumulated through our lives. Semantic memory is important in knowing what an object is, the name of someone, a color, or random facts that we use on a daily basis. Semantic priming effects have been demonstrated to reflect facilitated access to semantic information. Here we used semantic primes (1-Step, 2-Step, No Prime Control Condition) to facilitate the recall of missing song lyrics to well-known and not as well-known songs. Each participant received each condition (1-Step, 2-Step, No Prime Control Condition) for both well-known and not well-known songs. We used an online survey through Qualtrics and recruited participants through Buffalo State's campus and social media (i.e. Facebook). Results suggested for the 1-Step prime condition accuracy is higher for well-known compared to not well-known songs. There was also an interaction between well-known and not well-known songs showing that for well-known songs, 1-Step and 2-Step primes did not differ in accuracy, while for less known songs, the 2-Step primes were surprisingly better than the 1-Step primes. Results supported previous research indicating that priming allows individuals to respond quickly and accurately to information being tested.

## Election-Day Registration and Voter Turnout

**Kyle Gruber**, PSC 204: Political Statistics

Faculty Mentor: Professor Keyonghi Baek, Political Science

This research examines the impact election-day registration has had on voter turnout in all 50 states from 1980 until 2016, using a cross-sectional time-series research design. There are two goals for this study. The first is to determine whether states with election-day registration see an increase in voter turnout afterward. The second is, what will comparison data regarding voter turnout demonstrate in states with, versus states without, election-day registration. Based on the relevant literature, this research expects to find that election-day registration will increase voter turnout. A groundbreaking study conducted by Rosenstone and Wolfinger (1978) found that registration deadlines decreased voter turnout by 6 to 9 percent. More recently, restricting registration has become one of the most commonly used tactics by state legislatures to suppress voter turnout; however, methods to combat this problem have been sparse. Election-day registration removes registration deadlines entirely. Not only does this research provide timely and relevant analysis on the impact of election-day registration, it uses a systematic research design

with an expanded data set of all 50 states between 1980 and 2016. My presentation will include preliminary findings, as well as relevant information about the current state of election-day registration research.

## Environmental Decay Through Pesticides

**Sara Hillman**, PSC 399: Research Skills in Political Science

Faculty Mentor: Professor Kyeonghi Baek, Political Science

Over the years, Americans have seen bans and reversal of bans on neonicotinoids chemicals throughout presidential administrations. Derived from the meaning "new nicotine-like insecticides," the term "neonicotinoids" is a broad term for neuro-active insecticides that have contributed to the rapid decline in pollinator populations such as butterflies, moths, and bees. While other countries have banned the use of neonicotinoid chemicals, the Environmental Protection Agency still tends to keep the pesticides on the market while only providing restrictions to their use. Additionally, in recent studies there has been an increase in farmers filing for bankruptcy. In 2019, the American Farm Bureau Federation reported a 24-percent increase from previous years. With a great majority of farmers using pesticides for agricultural reasons and advancement of agricultural techniques integrating pesticides into farming, there is a question if the poverty and bankruptcy of farmers contributes to the increase usage of neonicotinoid chemicals. This research investigates and analyzes the relationship between farmer poverty rates and bankruptcies to the production and usage of the neonicotinoid chemicals. By doing so, it would provide data for a recommendation policy that would help farmers find a safe and inexpensive alternative for pesticides.

## Factors that Contribute to Mental Health Disorders Among LGBTQ+ Adolescents

**Lauren Burch**, HON 400: All College Honors Colloquium

Faculty Mentors: Professor Catherine Mazzotta, Social Work and Professor Michael Johnson, Modern and Classical Languages

LGBTQ+ adolescents present and are diagnosed with mental health disorders, such as depression and anxiety, at higher rates than their straight and cisgender counterparts. Widespread failure to address the specific needs of LGBTQ+ adolescents by schools, health care providers, and communities has prevented equal access to resources and necessary accommodations for the challenges they face. Factors that contribute to the increased rates of mental health disorders among this group will be examined using quantitative and qualitative studies that discuss the barriers and challenges faced by LGBTQ+ adolescents. This project will help create a comprehensive understanding of the factors associated with the increased levels of mental health

disorders among this population. This project will also suggest changes that are needed to develop LGBTQ+ culturally sensitive and accessible supports for LGBTQ+ adolescents burdened by behavioral health issues.

### Financial Literacy is the Backbone of our Country

**Paulina Vargas,**

PSC 399: Research Skills in Political Science

Faculty Mentor: Professor Kyeonghi Baek, Political Science

Not everyone is able to have access to financial education and some people just do not believe it is necessary. Research shows that people with access to financial education tend to be more financially stable or come from a high-income household. In today's society, financial stability should be a priority and the best way to accomplish this is through financial education. Financial knowledge can help people learn how to manage their finances better and become financially stable. Also, nowadays people have the opportunity to invest and save money in a way that conveys long-term benefits, but a lot of people do not know about these benefits and how to accomplish these goals because of their lack of knowledge regarding finance. This paper examines the benefits of financial education and its impact on people's perception of financial stability and satisfaction. This paper uses student surveys and related research in order to examine whether, and to what extent, financial education has any impact on students' satisfaction with financial knowledge and if socioeconomic status affects access to financial education at home and beyond.

### First Steps in Research: Cognitive Psychology (EURO)

**Adrianus Wutz,** Psychology

Faculty Mentor: Professor Stephani M. Foraker, Psychology

This semester has been filled with a vast amount of experience for me. The experience I found to be the most useful was being offered a research assistant position with Dr. Foraker; as a freshman, I had to accept. Dr. Foraker is currently studying whether there is a correlation between traits along the autism spectrum and hand gestures; for example, if people with ASD traits find it more difficult to pick up on certain hand gestural cues. I assisted in setting up an online autism spectrum survey used to find out how participants score on traits from the spectrum. This experience has allowed me to become familiar with how to create an online survey of research subjects using Qualtrics. I also completed CITI ethics training for working with human subjects in research. An obvious problem occurred, however, when Covid-19 forced us to adapt rapidly in order to proceed with our research plan. As a result, I learned many useful applications that could possibly be used in the future.

Applications like Blackboard Collaborate allowed us to continue our weekly meetings and communicate effectively on progress, and Google Drive allowed us to share research documents with ease. I'm thankful to be learning a variety of techniques and effective strategies for maintaining progress.

### Ghrelin and the Stress Response

**Nicolas Giorgianni,** Psychology and Cassandra

Lewandowski, Psychology

Faculty Mentor: Professor Naomi McKay, Psychology

Though a relationship between stress and hyperphagia has been established, little research exists that examines the underlying physiological mechanisms that may cause this relationship. Rodent research suggests that ghrelin (a feeding-stimulatory hormone) may play a crucial role in stress-eating behaviors. The purpose of the current study was two-fold. First, to determine if stress mediates ghrelin release and second, whether consuming a meal after a stressor will affect the ghrelin feeding response. It was hypothesized that ghrelin would increase in the presence of stress and that the intake of a high-carbohydrate/low-fat food item would suppress ghrelin more than a high-fat/low-carbohydrate food item. Upon arrival, participants provided a saliva sample (for cortisol) and were fitted with an indwelling intravenous catheter for blood collections (for ghrelin). After a 45-min relaxation period, a blood and saliva sample were collected, and participants were divided into stress condition groups (stress or no stress), with those in the stress condition undergoing a mild, laboratory stressor. Following the stress condition, blood and saliva were collected again and participants were asked to consume either a high-fat, high-carbohydrate or no food condition. Fifteen minutes after food condition, saliva and blood samples were collected again, and a final blood collection occurred 75-mins after food condition. A mixed-design ANOVA showed an interaction of time x stress ( $p = .002$ ) and found elevated ghrelin levels were present in participants who underwent the stressor ( $p = 0.08$ ). These results indicate that stress may stimulate food intake through an elevation in the feeding-stimulatory hormone ghrelin.

### The Hand that Guides: The Impact of Hand Gestures

**Alexander Orgek,** Psychology

Faculty Mentor: Professor Stephani M. Foraker, Psychology

As a EURO recipient, I assisted Dr. Foraker with an ongoing experiment that investigates how hand gestures can bias or affect understanding of a sentence, either with or without the gestures in place. To test this, we observed an actor reading a multi-sentence event description while performing a gesture on a very specific word, such as a "seasoning" gesture on the word

“finished” in the sentence: “She finished the food as the guests sat down.” The participant then answered a yes-no question about whether the character did something that was not stated in the multi-sentence prompt itself, in this instance being, “Did she take the food out of the oven?” for which the answer would have been no. I also participated in this part of the experiment, so that I could better understand how it worked and why certain aspects were used. In addition, I analyzed journal articles that contributed to understanding the process of the experiment, managed schedules for efficacy, and adapted online applications to effectively and efficiently continue research during an unusual situation this semester. I have found the research process much more intriguing than I had previously, by exploring the complete process beyond data collection.

### Helicopter Parenting, Grit, and Academic Adjustment Among College Students

**Chelsea VanRoo**, Psychology

Faculty Mentor: Professor Jill Norvilitis, Psychology

There has been growing concern about, and much recent research on, the topic of “overparenting” and its effect on college students. However, there are several different aspects of overparenting and it is currently unclear which aspects may be more related to negative outcomes. The purpose of this study was to examine whether “helicopter parenting,” which involves parental decision making, behavioral control, which includes parental control over the student’s friends, classes, and activities, or psychological control, which involves psychological manipulation of the student’s life, is related to grit, which is the ability to withstand adversity while maintaining passion for long-term goals (Howard, 2019). Furthermore, this study examined whether these aspects together are related to success in college overall. For this study, 162 students from various psychology courses were asked to complete an online survey consisting of demographic items and several scales. Results suggested that parental psychological control and parental control generally are negatively related to grit, but a combination of grit and higher levels of helicopter parenting predicts academic adjustment to college.



### Hengerer's: A Buffalo Legacy

**Madeline Friedler**, MST 623: Digital Museum Collections  
Faculty Mentor: Professor Noelle Wiedemer, Museum Studies

The Hengerer's department store was a staple of the Buffalo area for decades. The William Hengerer Company sold primarily shoes, household goods, apparel, and other accessories. Beginning with William Hengerer, the family and the business were well-known in the area. The Howard D. Beach Collection of glass plate negatives, owned by the Buffalo History Museum, served as the inspiration for this research. As part of the Museum Studies Digital Museum Collections course, the negatives were cleaned, rehoused, and digitized. Among them were portraits of William's grandchildren. Using genealogy sites, economic reports from the last century, and newspaper articles, a poster of the Hengerer family's personal history and their business enterprise was created. My research attempts to answer a series of questions: Did Buffalo host a family living a life comparable to the Rockefellers? Or was their daily life more comparable to the common citizen? How did the family's daily life compare to that of their business?

### How Automation Can Make Healthcare More Affordable

**Kailen Bittner**, PSC 399: Research Skills in Political Science  
Faculty Mentor: Professor Kyeonghi Baek, Political Science

Automation has accelerated in recent years to improve and scale throughout its development. This research paper looks to investigate the changes automation is having on the economy and productivity. There are many fields in which increased automation will be useful. This paper focuses on three outcomes automation can create in healthcare: affordability, reliability, and reduction of cost. Automation can be used as a tool to assist doctors in making better decisions. This can contribute to a rise in overall quality of care while giving doctors back valuable time, which would be offset by automation. This will also create increased reliability by creating more positive replicable outcomes during treatment. Since automation could help by offloading work that doctors might often be stuck doing, efficiency will also increase. As automation in the medical field increases, this could give other medical professionals more detailed information to assist them in treating patients. This could in turn lower overall healthcare costs and bring more access to affordable healthcare for those who do not have access to healthcare. This research compiles groups of medical practices with automated data processing and compares them to practices without such processing. The expectation is that medical practices that use automated processing will be more efficient and more affordable.



## **How Safe: What Effect Do New Bail Reform Programs Have on the Public?**

**Oliver Dubinsky,**

PSC 399: Research Skills in Political Science

Faculty Mentor: Professor Kyeonghi Baek, Political Science

The United States criminal justice system is one that has often benefited people in the upper and middle classes and leaves impoverished people with their lives upended due to low level crimes. Almost a half million people are in jail cells every day because they are unable to post bail. The recent bail reform in New York State was met with open arms by advocates who have loved ones confined to jail cells simply due to financial constraints. Although there is not a great deal of research on the effects of the newly proposed bail reform programs in New York State, there is a vast amount of data on the effects of bail reform in other states that have implemented versions of reform in the past (e.g., New Jersey, California, Alaska). So far the findings on the safety of bail reform have turned up two rather obvious results. One view is that it is a necessary program to help people who may not have the financial means to post bail and sometimes plead guilty to a crime they did not even commit. The other view is that bail reform has the reverse effect and lets dangerous criminals back onto the streets without any real repercussions.

## **Mindfulness Meditation as a Stress and Anxiety Reduction Technique for College Students**

**Danielle Pinelli,** Psychology

Faculty Mentor: Professor Kimberly Kamper-DeMarco,

Psychology

Stress and anxiety are known to be linked to a number of physical health problems, including the onset of some cardiovascular diseases and autoimmune diseases. College students comprise a population that is highly vulnerable to stressors and higher rates of anxiety, making generalized anxiety disorder one of the most prevalent psychiatric disorders identified on college campuses. The purpose of this study is to examine the effects of a brief mindfulness meditation session on college students' stress and anxiety levels. State anxiety were assessed using the State-Trait Anxiety Inventory (STAI), perceived stress was assessed using the Perceived Stress Scale (PSS), mindfulness was assessed using the Five Facet Mindfulness Questionnaire, and the meditation experience is assessed using the Experiences During Meditation (EOM-DM) subscale of the Effects of Meditation (EOM) scale. All scales are completed online, both before and after the video-guided meditation session occurs. Given the current literature on the effects of mindfulness meditation on anxiety and stress reduction, it is hypothesized that a brief mindfulness meditation session will successfully reduce

stress, reduce anxiety, and increase mindfulness among college students.

## **The Naturalization Process Across Different Administrations**

**Anthony Janda,**

PSC 399: Research Skills in Political Science

Faculty Mentor: Professor Kyeonghi Baek, Political Science

America has often been referred to as the melting pot of the world. Immigration has always been the backbone of this country. However, since 9/11, Immigration has become one of the most widely debated topics in America. Our views in this country often fall along political lines. Does the Naturalization Process in our country change depending on what political party is in charge? Is there a push/pull effect on the data depending on the political party in charge? I seek to find out what the Naturalization Process looks like over multiple administrations in the United States. My research examines two Republican administrations (H.W. Bush and W. Bush) and two Democratic administrations (Clinton and Obama). These administrations provide an equal number of administrations pre- and post-9/11 with a balanced number of political parties being represented as well. My study variables are policy guidelines, executive orders, citizenship applications, citizenship approvals, wait times, and fees. Background research includes asylum, chain migration, visa lotteries, birthright citizenship, the 14th amendment, and immigration (legal and illegal). The arc of the data and policies over multiple presidencies is projected to accurately tell the real story of the Naturalization Process in America.

## **Neuropeptide Y and Motivation to Seek Food in Rats**

**Michael Brzyski,** Psychology, **Gillian Falletta,**

Psychology and **Paras Khan,** Psychology

Faculty Mentors: Professor Jean DiPirro, Psychology and

Professor Alexis Thompson, Psychology

The present study aims to investigate the effects of neuropeptide Y (NPY) on motivation to obtain food by implementing a progressive ratio schedule in an operant task in rats. A one-factor experimental design with repeated measures will be used to test this by assessing the effect of three varying doses of NPY, along with a vehicle control, in 24 Long-Evans (hooded) rats at one-week intervals in a counterbalanced manner. Motivation to seek food will be determined by measuring the "break point," which is the maximum number of active snout pokes in a one-hour span that the rat is willing to make in order to receive a banana-flavored food pellet. Other measures, including number of inactive head entries and amount of food consumed during the experiment, will be assessed to address potential alternative explanations for the results. The main

hypothesis for this study is that NPY will increase the number of active hole snout pokes to obtain a food pellet. Data collection is ongoing.

### **Nontraditional Child Welfare Placements: A Study on LGBTQ Adoption**

**Kathleen Dunne, Alana Kary, Taylor Schneeberger and Christina Scioli,**

CWP 102: Argumentation and Research

Faculty Mentors: Professor Susan Mary Paige, Academic Success Program and Professor Jane E. Sullivan, College Writing Program

A traditional family unit is typically composed of a female and male parent. Adoptions by same sex couples has alleviated prejudices against non-traditional families however some view this family arrangement as problematic for the children involved. Many countries do not legally allow LGBTQ couples to adopt children. The stigmas surrounding this community, with many opponents standing on their religious beliefs, do not allow same-sex couples to adopt. We believe that allowing LGBTQ couples to adopt would provide stable homes for children in the failing adoption and foster care systems. Previous research studies suggested that children with same-sex parents have less behavioral and social problems and may even have better emotional connections with their parents. We are focusing on the current state of the adoption and foster care systems in conservative states (Texas, Mississippi and South Dakota) that have passed legislation limiting LGBTQ adoptions. We will replicate a study that documented behavioral patterns of children who grew up with LGBTQ parents and compared them to children who grew up with traditional families. With prior IRB approval, we collected data on: (a) the demographics of prospective adoptive families; (b) the numbers of adoptions in each category this; and (c) measures of the adjustment of children adopted by LGBTQ couples compared to traditional families.

### **Prevalence and Effects of Bullying by Teachers**

**Anna Weigel,** Psychology

Faculty Mentor: Professor Jill Norvilitis, Psychology

Peer bullying has been a widely researched and studied topic of interest. Numerous precautions have been taken in order to prevent bullying from occurring, as depicted in textbooks, ad campaigns, and even bus stops. However, there are very few studies in which the perpetrator is a teacher, directing aggressive behavior towards a child. In this study, we are delving into student-teacher relationships, primarily focusing on bullying. We have developed a retrospective questionnaire in order to identify the prevalence of teacher bullying in kindergarten through 12th grade, as well as to examine the long-term effects it has on

the student. The questionnaire contains both multiple-choice questions and written responses, in order to evaluate and better understand the personal experiences of the students. We also collected data among various demographics to determine which groups have been impacted most, such as age, ethnicity, gender, and type of school attended. At this moment there have been 77 responses, with 36.84% of students indicating that they were bullied by a teacher, and 23.68% of students who reporting that they have had an experience but are unsure if it was explicitly bullying. Data collection is ongoing and results will be presented at the conference.

### **Relations Between Screen Time on Social Media and Mental Well-being**

**Hannah Kanouse,** PSY 499: Independent Study

Faculty Mentors: Professor Stephani Foraker, Psychology and Professor Michael MacLean, Psychology

The use of social media and digital devices has become ever-present in our society. This study examined the relationship between time spent on different social media sites and mental well-being, specifically, anxiety and depression, predicting positive correlations. Notably, we examined not only estimated screen time, but actual screen time, which very few studies have assessed. Data from 66 iPhone users from the Buffalo area were collected via Qualtrics online surveys at three time points in one semester; 52 participants completed at least two surveys. Participants reported estimated then actual time spent on social media (Instagram, Twitter, Snapchat) using their iPhone's screen time tracker, then completed questionnaires for depression, anxiety, and demographics. Interestingly, we found no significant correlations with actual screen time. However, positive correlations between estimated screen time and anxiety occurred. In particular, the more time participants thought they spent on social media, particularly Snapchat and Instagram, the more anxious they were about privacy and interactions online. Regression analysis across time points, though, showed that neither actual nor estimated screen time was a significant predictor of the outcome variables. Specifically, hierarchical regressions further revealed that gender was a significant predictor of anxiety (females higher than males), and that estimated screen time did not significantly explain any further variance. This research adds to our understanding of how social media use impacts our mental well-being in young adulthood. How we think we spend our time can have different impacts than how we truly spend our time.

## **The Relationship between Anxiety and Peer Victimization in College Students**

**Michelle Bass**, PSY 495: Special Project

Faculty Mentor: Professor Kimberly Kamper-DeMarco,  
Psychology

Peer victimization is a serious and prevalent problem that has been found to take place all around the world (Jimerson, Swearer & Espelage, 2010). Peer victimization includes different forms of harassment and aggression that has been found to have negative associations with emotional functioning such as internalizing distress (Barchia and Bussey, 2010). Past research has studied whether children with anxiety disorders are more likely to be victimized. A few studies have found that children experiencing victimization have reported high levels of anxiety (Crick et al., 1999). Previous studies have also found that anxious individuals have reported higher rates of being victimized (Crick & Grotpeter, 1996). Past research has determined that victims are three times more likely to have an anxiety disorder than non-victims (Kumpulainen et al., 2001). The aim of the current study is to investigate if there is a relationship in college students between peer victimization and anxiety. The current study will measure if there is a relationship between peer victimization and anxiety by administering a survey on Qualtrics for Buffalo State College students that asks the participants to reflect on and rate forms of peer victimization along with scales measuring anxiety levels and symptoms. Data collection is currently ongoing. We hypothesize that there will be a relationship between peer victimization and anxiety in college students. We expect to find that high ratings of peer victimization and high ratings of anxiety will co-occur.

## **Salivary Alpha Amylase: An Affect of Identifying as a Stress Eater**

**Kristin Czajka**, Biopsychology and **Michael Brzyski**, Psychology

Faculty Mentor: Professor Naomi McKay, Psychology

Salivary alpha amylase (sAA), an enzyme that hydrolyzes starch into glucose, is reliably used as a stress biomarker, yet its association with stress eating is not well understood. The current study aimed to determine if self-categorization of stress eating was predictive of stress-induced elevation in sAA and whether this elevation in sAA was indicative of a reduction in self-rated hunger and self-rated palatability. Participants underwent the Trier Social Stress Test, a reliable acute laboratory stressor, and completed a battery of questionnaires measuring personal characteristics, eating patterns during stress, hunger, food liking, and anxiety. Saliva samples were collected at various points throughout the study. It was predicted that those who reported being stress under-eaters would show a greater increase in stress-induced sAA than individuals who reported being stress over-eaters, or reported no dietary change during stress. Results were not significant  $F(2)$

$= 1.09$ ,  $p = .403$ . Additionally, a negative correlation between sAA and self-rated hunger was predicted. While results were not significant ( $r(9) = -.359$ ,  $p = .279$ ), the pattern supports the hypothesis. Lastly, a negative correlation between sAA and self-rated palatability of healthy and unhealthy food items was predicted. While results were significant for healthy food ( $r(9) = .723$ ,  $p = .012$ ), the pattern was in the opposite direction of the hypothesis. Results were not significant for unhealthy food ( $r(9) = .095$ ,  $p = .781$ ). With that said, it is likely that sAA may still have implications for changes in dietary behaviors during times of acute stress.

## **Sanguine Paradise: Effects of Cortisol and Ovarian Hormones on Emotional Memory**

**Sean Clark**, Psychology, **Brianna Bailey**, Psychology  
and **Johnathan Fehrer**, Psychology

Faculty Mentor: Professor Jean DiPirro, Psychology

This study was designed to investigate the effects of estradiol (E2) and progesterone (P4) in the presence of heightened levels of cortisol, on the consolidation of emotional memory in female students. The design was:  $3(E2/P4 \text{ LEVEL: HIGH [luteal] or LOW [follicular] or LOW [monophasic contraceptives]}) \times 2[STRESSOR: PRESENT \text{ or } ABSENT] \times 2[STORY \text{ VALENCE: NEGATIVE or NEUTRAL}]$ . Previous research has shown that ovarian sex hormones increase stress-induced cortisol release. Elevated cortisol levels are associated with enhanced emotional memory consolidation. This suggests that in response to a stressor, women with higher ovarian hormone levels will experience greater cortisol release and therefore enhanced emotional memory consolidation compared to women with lower levels of E2 and P4. Accordingly, naturally cycling women in the luteal phase will exhibit better recall for emotional memory consolidation under stress than naturally cycling women in the follicular phase and women taking monophasic hormonal contraceptives. During the pilot study, participants were asked to read two stories created from the Affective Norms for English Text and then rate the emotional valence of the stories. In the primary study, participants were read one of the stories (negative or neutral) while shown slides from the International Affective Picture System before submerging their right hand into either cold water (present) or warm water (absent). One week later, participants were asked to come back for a surprise free-recall test. We expected that stressed women in the luteal phase would recall more emotional elements of a story than their counterparts. Data collection is ongoing.



## Self-Regulation and Internalizing Symptoms in College Students

**Shaeanne Bernard**, PSY 495: Special Project  
Faculty Mentor: Professor Kimberly Kamper-DeMarco, Psychology

College can be a highly stressful environment for some individuals. This research study aims to examine whether self-regulation is associated with internalizing symptoms among college students. Previous research has shown that college students are at risk for high rates of mental health problems like depression and anxiety (i.e., internalizing symptoms; Brody et al., 2018). In fact, Brody and colleagues reported that approximately 7.7% of adults in the US, around college age (i.e., 20-29) reported having depression, with that number rising to 10.1% for women in that age range. A study conducted with 374 college students on academic success and its association with internalizing symptoms. Beiter and colleagues reported that in the USA, almost 10% of university students have been diagnosed with, or treated for, depression over the past 12 months (Beiter et al., 2015). These mental health problems can make getting through a time of autonomy more difficult and as such a better understanding of the contributing factors to internalizing problems in college students is needed. Self-regulation can be defined as “controlling one’s behavior, emotions, and thoughts in the pursuit of long-term goals” (Cuncic, 2020). This may be an important predictor of internalizing problems. For the current study, we investigated the association between self-regulation and internalizing symptoms via an online questionnaire. Assessments of self-regulation included the Stroop Task (Stroop, 1935) and the Brief Self-Control Scale (Tangney et al., 2004) while the Inventory of Depression and Anxiety Symptoms (IDAS; Watson et al., 2007) was used to assess internalizing problems. Data collection is currently ongoing.



## Speech-Language Pathology in Ghana: An African-Centered Exploration

**Bryanna Marshall**, Speech-Language Pathology  
Faculty Mentor: Professor Marcus Watson, Africana Studies

My research focuses on speech-language pathology in Ghana. I apply my exposure to Africana Studies particularly to methodology and interpretative lens, in response to the cultural limitations of the discipline of speech-language pathology. The National Black Association for Speech-Language and Hearing at SUNY Buffalo State was founded for this very reason. My paper on my experiences in Ghana is based on my presentation at the 2020 National Council for Black Studies conference in Atlanta. It first summarizes my African-centered research and its relevance to my deep historical, cultural, and psychological connections to the African continent. In my project, I explore opportunities to re-imagine the topic through the critical lens of Africana Studies' questions and priorities.

## Too Hard to Breathe in Low-Income Minority Communities with the Installation of the Keystone Pipeline

**Sara Hillman**, PSC 204: Political Statistics  
Faculty Mentor: Professor Kyeonghi Baek, Political Science Department

The City of Alberta, Canada, the beginning of the Keystone Pipeline, sits on a tar sand deposit. Within the deposit is a chemical compound known as bitumen, a type of petroleum that can be converted into fuel. However, crude oil is known as the dirtiest oil because of the difficulty of extracting the oil and cleaning up the crude. Besides the Congressional vote on the Keystone XL Pipeline Approval Act, the states of Montana, South Dakota, Nebraska, Kansas, Oklahoma, and Texas county's Board of Commissioners offices have had to vote on whether the installation of the Keystone Pipeline would pass through their counties. People living in low-income communities are reduced to the negative effects of the Keystone Pipeline. TransCanada, the company responsible for the Keystone Pipeline, guaranteed the installation of the Pipeline would bring in thousands of jobs as well as billions of dollars to the United States economy. With this research, I examined two questions: a) whether the economic status of the counties that the pipeline runs through, affected the voting actions of the counties for the Keystone Pipeline proposal, and b) whether the installation of the Keystone Pipeline decreased poverty rates for surrounding counties. I argue that with the route of the pipeline passing through low-income minority communities, the county Boards are more likely to approve the Keystone Pipeline with little consideration of the environmental and human impacts.

## **The Underdog of the International Community Influencing Action Against Climate Change: Small Island Developing States**

**Elizabeth Rakowski**, PSC 399: Research Skills in Political Science

Faculty Mentor: Professor Kyeonghi Baek, Political Science

As an increasingly paramount situation, climate change has begun bringing negative consequences to the international community. Those states that are feeling the effects of climate change in the here and now are small island developing states (SIDS). How are small island developing states capable of making a significant impact on internationally adopted decisions regarding world-wide issues? Alliance of Small Island States (AOSIS) are guiding the international community into action to combat climate change and work towards sustainability. When smaller less powerful states band together over commonality, then they are capable of completely establishing an influential power

over all other states, especially in terms of furthering the agenda on combatting climate change through efficient resolutions. This research uses complimentary methods primarily with quantitative methods with small data analysis as well as qualitative methods with case studies. The case study of the SIDS of Fiji shows how an underdog of the international community was able to secure a powerful role of influence in the worldwide discussion of climate change. By having a Fijian representative become president of COP23 or the 23rd annual Conference of the Parties to the 1992 United Nations Framework Convention on Climate Change, and holding the conference in Fiji in 2017, it allowed for a major shift in power to occur on which states are the leading actors against climate change. The international community is moving from larger developed states to SIDS when it comes to climate change and how to approach action, sustainability, resolutions, and preparing for the future.



