2019 Celebration of Scholarship

Table of Contents

Schedule At-a-Glance ................................................................................................................................... 1
MSU Campus Map ....................................................................................................................................... 2
Clark Student Center Map ............................................................................................................................ 3
Faculty & Graduate Student Podium Presentations ...................................................................................... 4
Faculty & Graduate Student Poster Presentations ........................................................................................ 8
Undergraduate Student Oral Presentations ................................................................................................... 9
Undergraduate Student Poster Presentations .............................................................................................. 30
Acknowledgements ..................................................................................................................................... 43
2019 Celebration of Scholarship
Schedule At-a-Glance

**Wednesday, April 24**
1:00 – 4:00  Faculty & Graduate Student Podium Presentations  Comanche/Kiowa
1:00 – 4:00  Faculty & Graduate Student Poster Presentations  Atrium

**Thursday, April 25**
9:00 – 5:15  Undergraduate Student Oral Presentations  Comanche/Kiowa/Wichita I&II  Bolin 100
9:00 – 4:00  Undergraduate Student Poster Judging  Atrium
7:30  Wind Ensemble Performance & Award Announcements  Akin Auditorium
MSU Campus Map
2019 Celebration of Scholarship
Faculty & Graduate Student Podium Presentations
Wednesday April 24, 1:00 – 4:00 PM
Clark Student Center

Session 1A  1:00 – 2:20 PM  Comanche Suites

New Mathematical Model for Supersonic Panel Flutter
Dr. Salim Azzouz, Dr. Guy Bernard
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

The purpose of this presentation is to give a brief overview of an on-going research project involving Dr. Salim Azzouz (Mechanical Engineering Department), and Dr. Guy Bernard (Mathematics Department). This project entitled 'New Mathematical Model for Supersonic Panel Flutter', aims to improve the mathematical treatment of the von Karman nonlinear stretching strain term in the Finite Element Formulation of thin plates. The application of this work is to be used in aircraft design to prevent flutter. The flutter phenomenon affecting aircrafts will be described as well as its catastrophic consequences. The aircraft fuselage, wings, and surfaces are modeled as thin walled plates. The three theories involved in the formulation of the Finite Element modeling of thin plates will be presented: the Mindlin-Reissner plate theory, the von Karman nonlinear stretching displacement theory, and the Marguerre shallow shell theory. The aerodynamic, thermal, and acoustic loads affecting panel flutter will be discussed. Preliminary results for this research will be presented.

Unveiling Citizenship and Immigration in Canada v. Zunera Ishaq
Herbert McCullough
Prothro-Yeager College of Humanities and Social Sciences, Department of Political Science

Dress Codes are tools that dominant cultures have historically used to assimilate minority cultures. This paper will analyze this in Canada vs Ishaq, which shows the contemporary power of dress code debates in legal and political activism. In this case, Zunera Ishaq challenged the Canadian government's regulation to remove any form of face covering while taking the Oath of Citizenship. Ishaq claimed this regulation would require her to remove her niqab, violating her religious freedom. Should the government be able to ban the niqab under the guise of social integration and women's empowerment or should religious and cultural freedom include the ability to reject assimilation and Western conceptions of women's rights? Opponents claimed that it was forced assimilation, which contradicts Canada's Mosaic Theory where newcomers are encouraged to keep their own cultural heritage and integrate within society. Supporters argued that the niqab is based on misogyny and its ban would help integrate Muslim women. This research is a comparative case study in analyzing the levels of integration of Muslims in two countries that do not have a niqab ban (Canada and Australia) to two countries that have a niqab ban (France and Belgium). In conclusion, this paper argues that the dress code is a venue for political and cultural struggles in both states, where dress codes have been used to segregate cultural communities. This is supported in the findings where Muslim residents felt more welcomed in the two states without a niqab ban compared to the two states with a niqab ban.

NetLogo and GIS: A Powerful Combination
Broday Walker, Dr. Tina Johnson

McCoy College of Science, Mathematics and Engineering, Department of Computer Science

Agent-based simulation modeling is an effective tool for identifying emergent phenomena in complex systems. NetLogo is a popular program used to create models which consist of a number of agents who interact inside a given environment. Using a simple set of rules, each agent acts within the world, influencing other agents and the world itself. Models run in NetLogo frequently do not incorporate real-world data, which has led to criticism of agent-based modeling and the reproducibility of results. To improve the realism of the environment used in agent-based simulations within NetLogo, the Geographical Information Systems (GIS) extension can be used to import vector data that replicates real-world features.
Models utilizing the GIS extension are able to draw upon the information stored in the vector dataset's database. The integration of the GIS extension with the NetLogo programming language is demonstrated using a vector map of Texas' 254 counties. The model shows the steps taken to integrate the GIS information as well as a visualization of the interaction between each county and their associated information.

Session 1B  1:00 – 2:20 PM     Kiowa Room

“They Can All Go To the Devil”: Frank James and the Shaping of James Brothers' Mythology in Alabama
Dr. Whitney Snow
Prothro-Yeager College of Humanities and Social Sciences, Department of History

In the custody of deputy marshals, Alexander Frank James departed Kansas City, Missouri, on February 13, 1884, to face charges for robbery. This would be no short trip to a local or even state jail but instead, a long journey across the country. Frank's ultimate destination was Huntsville, Alabama, a rural city on the cusps of becoming an industrial haven, primarily for textile mills. There he was to stand trial for complicity in the robbery of a canal paymaster in nearby Muscle Shoals. The calamity that soon befell this Tennessee Valley town evolved from fact, meshed with fiction, and ultimately became legend. Weeding out rumors and myths, leaves a very simple truth— in all likelihood, Frank did not commit the crime in question. Even so, the ordeal certainly shaped James mythology, especially in Huntsville. Its locals weaved many tall tales about Frank's visit,' and continue to do so to this day. Exploring public perception of the James gang outside of Missouri, this case study argues that the trial's significance lay not in its verdict, but in the reasons behind the support Huntsville locals gave the brother of Jesse James.

Oscar Wilde and the Origins of Queer Czech Literature
Dr. Kirsten Lodge
Prothro-Yeager College of Humanities and Social Sciences, Department of English, Humanities, & Philosophy

I propose to introduce a topic I have been working on recently: the influence of Oscar Wilde's trial on the origins of homoerotic poetry in Czech literature in the mid-1890s. I will briefly discuss the European reaction to Wilde's trial, which was almost entirely negative, and then describe the exceptionally positive (though ambiguous) reaction to the trial in the Czech Modernist journal The Modern Revue. Jiri Karasek, who was the de facto editor of the journal, was inspired by Wilde's work and trial to publish his own homoerotic poetry, which was promptly banned by the censors. Karasek himself was nearly sent to prison. I do not intend to read my whole paper in the limited time allotted at the Celebration of Scholarship, but I will present two of Karasek's groundbreaking poems to the audience and summarize my interpretation of them and their relation to the Modern Revue's defense of Oscar Wilde. Karasek went on to become the first Czech author of queer novels and a leader of the Czech movement for the legalization and acceptance of homosexuality in Bohemia.

Consuelo Jimenez Underwood: Art, Weaving, Vision
Dr. Ann Marie Leimer
Fain College of Fine Arts, Juanita & Ralph Harvey School of Visual Arts

Consuelo Jimenez Underwood: Art, Weaving, Vision is a co-edited collection of writings about contemporary artist Consuelo Jimenez Underwood's innovative weaving-based multimedia work. From shrouds commemorating transcultural hero/heroines woven in natural fibers, to three-dimensional barbed wire sculptures, to installations using recycled plastic bags, Jimenez Underwood's powerful oeuvre compassionately engages with today's social, economic, and environmental issues, while also re-visioning painting, weaving, and the very definition of art. The presentation will discuss one chapter from the anthology co-edited by Dr. Laura E. Pérez of University of California, Berkeley, and Ann Marie Leimer, titled 'Garments for the Goddess of the Américas: The American Dress Triptych,' which Leimer developed at the behest of her co-editor. The American Dress Triptych constitutes a sharp deviation from the majority of Jimenez Underwood's art production because the works are not woven, but sewn by hand from silk velvet, and then embellished with barbed wire, silkscreened images, and gold metallic thread. The dress as
form in the history of art emerged in the mid-twentieth century as a vital force for a social critique of consumerism and gender disparities, and as a means to reference issues of the body, the vagaries of the fashion industry, and the patriarchal standard of beauty. Feminist artists from the 1960s onward used the dress to challenge patriarchy and to combine sculpture with performance, animating the dress through live fashion shows. However, Jimenez Underwood moves beyond wearables, which were never her intention, beyond objects in the service of social, cultural, or artistic performance, beyond homages to feminine power, and moves into the realm of the spirit.

Session 2A  2:40 – 4:00 PM    Comanche Suites
Performance of Mirror Sign by Igor Karaca
Dr. Andrew Allen, Dr. Gordon Hicken
Fain College of Fine Arts, Department of Music
Drs. Allen and Hicken will present a performance of Mirror Sign for soprano saxophone and percussion, composed for the MSU faculty members by Dr. Igor Karaca, professor of composition at Oklahoma State University and the Sarajevo Conservatory. The duo recently premiered the work at the World Saxophone Congress in Zagreb, Croatia, followed by an American premiere at the North American Saxophone Alliance Region IV conference, held at the University of Arkansas, Fayetteville.

Session 2B  2:40 – 4:00 PM     Kiowa Room
Opium Wars, Loot, and Prize
Dr. SuHua Huang
West College of Education, Department of Curriculum & Learning
The purpose of this presentation is to explore Euromerican imperial powers that looted, enjoying the pleasure of plunder, and the making of multi-power invasions of China in 1860 and 1900. Great Britain enacted a pedagogical project that was itself a form a colonization after the second opium war took place in early and mid-October in 1860 in Beijing, China (Hevia, 2003). The presenter examined and analyzed a variety of resources, such as British Foreign office documents, diplomatic memoirs, auction house and museum records, nineteen-century research and scholarship in Chinese history, documental movies, and photographs. Interviews with Chinese scholars, and former Chinese imperial family members are included.

How Contemporary Movies use the 'Mobster Model' to Depict Antagonists
George Dale Ralston, Jr.
Faculty Mentor(s): Dr. Whitney Snow
Prothro-Yeager College of Humanities and Social Sciences, Department of History
This project will explore how depictions of the cinematic mob have changed over the decades. Even though outright mob movies are intermittent today, that is not the case if historians look at more covert depictions of organized crime. For example, in less obvious organized crime movies, mobsters are often depicted as heads of corporations. I argue that the modern 'Don' is the CEO of corrupt company. These businessmen have a great deal in common with mobsters and sometimes have connections to organized crime. In fact, the 'mobster model,' a phrase of my own coining, entails taking characteristics commonly associated with mobsters when creating a non-mob antagonist. In this way, the sub-genre mafia film has pervaded all other genres.

Mobsters in Musicals
Caitlin McNeely
Faculty Mentor(s): Dr. Whitney Snow
Prothro-Yeager College of Humanities and Social Sciences, Department of English, Humanities, & Philosophy
This study examines the portrayal of mobsters and gangsters in movie musicals, such as Victor/Victoria, Guys and Dolls, and Kiss Me Kate. These mobsters and gangsters will be evaluated based on the following criteria: how they compare to depictions of organized crime in non-musical films, how they compare to the
real-life mafia and mob culture, and what role gender and humor play in these musical gangster portrayals. Preliminary conclusions suggest that mobsters in movie musicals are often depicted with humor, while still representing the archetypical gangster, with wealth and bodyguards for the high-ranking and violence-based money collection for underlings.
2019 Celebration of Scholarship
Faculty & Graduate Student Poster Presentations
Wednesday April 24, 1:00 – 4:00 PM
Clark Student Center Atrium

Poster 1: Septic Arthritis
Dora Williams
Faculty Mentor(s): Vicki Sanders
Gunn College of Health Sciences & Human Services, Department of Radiologic Sciences

Septic arthritis is caused by infectious organisms that invade the joint space by direct contact or via the bloodstream. Also known as infectious arthritis, septic arthritis is most commonly caused by the bacteria staphylococcus aureus in adults. Because of the destructive processes of autoimmune diseases on joints, staphylococcus aureus or other types of bacteremia can deposit in the synovial membrane, cartilage or bone. Joints of these type of patients tend to have 'increased adhesion factors' as well as microvascular networks which enhances the opportunity for bacteremia to grow. Once invasion has occurred, abnormal layers of fibrovascular tissue (pannus formation) begins to form causing joint effusion and destruction of cartilage and bone. This case study examines the radiographic and MRI features, patient presentation, and treatment of septic arthritis in a 71 y/o male patient with right ankle swelling without trauma.

Poster 2: Avascular Necrosis of the Femoral Head
Suzzette Gilliland
Faculty Mentor(s): Vicki Sanders
Gunn College of Health Sciences & Human Services, Department of Radiologic Sciences

Avascular necrosis (AVN) of the femoral head is a pathologic process that results from interruption of blood supply to the bone. AVN of the hip is poorly understood, but this process is the final common pathway of traumatic or nontraumatic factors that compromise the already precarious circulation of the femoral head. Femoral head ischemia results in the death of marrow and osteocytes and usually results in the collapse of the necrotic segment. This case study will examine the patient presentation, radiographic features, prognosis, and treatment of a patient with avascular necrosis involving the femoral head.

Poster 3: Cutaneous T-Cell Lymphoma
Amanda Oppedal
Faculty Mentor(s): Vicki Sanders
Gunn College of Health Sciences & Human Services, Department of Radiologic Sciences

Cutaneous T-cell lymphoma, also called mycosis fungoides, is a type of malignant T-cell lymphoma that primarily involves the skin. Cutaneous T-cell lymphoma is initially an indolent lymphoma but in its later stages can cause peripheral lymphadenopathy and can finally progress to widespread extracutaneous visceral/internal organ involvement. This case study will follow a patient presenting with left lower calf and inguinal lymph node involvement through his clinical presentation, plain imaging, MRI, and PET imaging diagnosis, and treatment of diagnosed cutaneous T-cell lymphoma. The description of the pathology and statistics/incidence will be discussed.
Fain Elementary Special Session  9:00 – 10:00 AM  Comanche Suites
Third Grade 9:05-9:12
Be the Solution to Water Pollution
Aadien Esquibel, Gavin Rose, Lyle Walker
Faculty Mentor(s): Ms. Megan Wortham
Fain Elementary, Third Grade

We are studying persuasive text and ways of how we can influence others to make a difference. We all are concerned about water pollution and its effects which is what led us to our topic-water pollution. We want to educate people on how they can help to be part of the solution. We learned a great deal about water pollution and its causes and effects. We reviewed websites such as epic.com. We also researched many online books. Water pollution is the contamination of water bodies (lakes, rivers, oceans). This contamination is mostly being caused by human activities. We learned through our research that there are several ways humans pollute Earth's water. These include littering, pesticides, farm waste, etc. We can help be the solution to this problem. We can help by conserving water, watching what we put down the drain or toilet, and picking up trash.

Fifth Grade 9:15-9:22
Double Stuffed or Just Fluffed? Are Double-Stuf Oreos™ Really “Double Stuffed?”
Kyrie Ruiz, Tre Shed, Jaydah Smith, Ryder Wester
Faculty Mentor(s): Mr. Frank Tarver
Fain Elementary, Fifth Grade

The purpose of our study was to determine if Double Stuf Oreos™ are truly double stuffed. We conducted 3 trials on regular and double stuffed Oreos™. We obtained the mass of the cookie, the wafer only and then we subtracted those two numbers to obtain the mass of the cream filling for both sets of cookies. Our study found that on average Double-Stuf Oreos™ only have 1.3 times more cream filling than regular Oreos™. Only 1 out of 3 of our Double Stuf Oreos™ were shown to be double stuffed. Our conclusion is that not every Double Stuf Oreos™ is truly double stuffed. We also conclude more trials need to be conducted to create a larger body of research.

Fourth Grade 9:24-9:31
Don't Throw It Away If It Can Be Used In Some Other Way
Fourth Grade
Faculty Mentor(s): Mrs. Laura Wetzel
Fain Elementary, Fourth Grade

How can we as environmentalists and researchers keep our community clean? In our world we have a crisis that can be eliminated; however the process is very long. With education, proper resources, and community involvement, excessive waste of recyclable materials will reduce the growing problem of pollution. Pollution not only damages the environment, it jeopardizes our health. As the 4th grade class of Fain Elementary, we created a PBL project with the intent for promoting awareness of the importance of recycling. We made beautiful art out of recycled materials as a part of The Home and Garden Show Recycle Art Exhibit. Each student had the opportunity to create a unique work of art out of recyclables. The students then created an informative brochure to educate the public about the different types of pollution and the impact to our planet. After researching different aspects of pollution, the students initiated a "reduce, reuse, recycle" project within our school. By exploring different variations of pollution, the students were able to identify how pollution affects our ecosystem. Another result we accomplished was to bring awareness to ourselves and the community with the importance of recycling. Our goal was to educate
the audience by reiterating the importance for our responsibility of caring for our environment. Fain’s 4th grade class will conclude that there is a growing amount of pollution in our world and it is dependent upon our community to make a positive change on our environment.

First Grade 9:33-9:40
First Graders Light Up the Holidays with Charitable Giving
Ainsley Biggs, Walker Berre, Anna Claire Fernberg, Kate Baucum
Faculty Mentor(s): Ms. Lea Hampton
Fain Elementary, First Grade
The objective of our first grade PBL was charitable giving. We wanted to enhance awareness of our community and contribute to a holiday tradition. We chose the MSU/Burns Fantasy of Lights. We began by participating in the Fantasy of Lights workday at the warehouse. The children got an up close and personal look at the displays. This piqued their interest in our project and motivated them to start raising money. The Fantasy of Lights workers were able to drive some of the displays by Fain on their way to MSU and took time to answer the student’s questions. Next, we held a Spirit Night at Chick-fil-A. We also sold candy at our school. We took a field trip to the Fantasy of Lights and we were able to present a check to Mr. Dirk Welch and Ms. Becky Burns-Johnson for over $1200. While we were there, we got to hear from Mr. Ernst about how he created the Toy Story display. The students felt pride in knowing they helped our community holiday attraction continue bringing joy to all who visit!

Second Grade 9:42-9:49
If at First You Don’t Succeed, Fly Fly Again
Georgia Humphreys, Maya Miziguir, Kelton Ruddy, Elaina Amy
Faculty Mentor(s): Ms. Robbie Kelley
Fain Elementary, Second Grade
Sheppard Air Force Base (SAFB) and the North Atlantic Treaty Organization (NATO) program are a vital part of our community in Wichita Falls. In order to make a connection we incorporated aviation concepts into our project. We learned a lot about aviation and the forces behind flight from pilots in our community. Through online research we studied the history of Amelia Earhart and the Wright Brothers. Through experiments, demonstration, and research we were able to create models of flying machines. As a result we developed models and multimedia presentations to share with professionals and local aviation enthusiasts in our community. Through history and our own hands on experiments we learned that failure is vital to success. This project on aviation introduced us to the principles of flight and sparked an interest for aerospace careers.

Session 1A  9:00 – 11:55 AM    Wichita I & II
O1 9:05-9:25
Arconic Engines - Dip Seal Mechanism
Heather Goolsby, Julie Goforth, William Mendez, Khoa Tran
Faculty Mentor(s): Dr. Salim Azzouz
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering
Arconic Engines is a manufacturing company that produces turbine engine components for the aerospace industry using the investment casting process. The MSU Engineering Department’s collaborative project with Arconic consists of creating a machine that will alleviate the ergonomic stresses on their employees caused by a manual wax dipping process and increases the production rate. The MSU team provided several ideas. Initial sketches were created and refined into two mechanisms called Mechanism 1 and Mechanism 2. These sketches were used to create SolidWorks models and animations that mimic the movements of the Arconic Engines technicians during the manual wax dipping process. The two mechanisms were shown to a panel of Arconic engineers and their health and safety team. After discussing the scope and time constraints of the project, Arconic prioritized finalizing Mechanism 1. At this point, a set of SolidWorks drawings were produced to feature the whole assembly of Mechanism 1. Currently, 2D and 3D drawings are produced for a bill of materials to start the construction of Mechanism 1. A Finite Element Analysis will be conducted on the mechanisms critical components to validate the machine reliability and robustness. Additionally, the cam theory will be used to dimension the cams of Mechanism 1.
and determine its kinematics. The displacement path and velocity associated with the motion of the cam/slider system will be determined. It is expected that the machine will be assembled by the MSU team and presented to Arconic Engines in May 2019.

O2 9:30-9:50
Multiphase Flow Performance in the Wellbore
Abigail Reyes, Till Gebel, Tapiwa Gasseler, Abdulhadi Alsadi
Faculty Mentor(s): Dr. Mahmoud Elsharafi
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering
Multiphase flow is found in various places both in nature and in practice, but it especially occurs in the oil field operation. It occurs in oil and gas wells, gathering systems and many piping systems. The presence of liquid (oil/water) and gas must be accounted for when designing and predicting flow patterns in both wells and pipelines. Gas-liquid two phase flows are generally difficult to examine, model and predict in that the interactions between the phases are fairly complex and at times chaotic. Due to these complexities, experimental as well as theoretical studies will be conducted in order to fully understand the relationship of gas-liquid phases. Experimental studies will consist of modeling and examining flow regimes in a complex piping system. Furthermore, theoretical studies will consist of two-phase flow simulations using software (ANSYS). Finally, comparing experimental and theoretical data will help to build systems that reduce production losses as well as further understand the complexities of multiphase phenomenon.

O3 9:55-10:15
Study of Deflection in Gasketed Plate Heat Exchanger Products under Hydrostatic Pressure
Chenai Sukume, Brian Blair, Chengxiang Xiao, Joseph Munholland
Faculty Mentor(s): Dr. Salim Azzouz
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering
This project is a collaboration between the Tranter Company and the MSU Engineering Department to study the deflection of Gasketed Plate Heat Exchanger (GPHE) under high hydrostatic pressure. The purpose is to improve the Tranter GPHE product design process. An experimental study is currently conducted in three stages beginning with a qualitative proof of concept test that uses a slow forming resin to determine the positions of the highest deflection when the GPHE unit is pressurized. Using these positions as a guideline, the second stage is to explore the use of strain gauges to determine strain values associated with the high deflections. The final stage is to explore the use of Vernier depth gauges and Linear Variable Displacement Transducers (LVDT's) to obtain definitive quantitative values for the GPHE deflections. At this point, the proof of concept test using the slow forming resin has been conducted and positions of greatest plate deflection have been determined qualitatively. Strain gauges have been attached to the aforementioned positions for the purpose to conduct the second stage test experiment. Vernier depth gauges have been purchased. They will be fixed to the heat exchanger frame using strong magnets. The Vernier's provide quantitative deflection measurement values. The exploration of the use of LVDT's concluded that their cost is prohibitive. It is expected that results from all three stages will complement each other providing a thorough exploration of the most economical and efficient experimental methods that may be used for the study of the deflection of GPHE products.

O4 10:20-10:40
Reducing Chromosomal Antibiotic Resistance in *E. coli*
Bethany Ann Russell
Faculty Mentor(s): Dr. James Masuoka; Dr. Jon Scales
McCoy College of Science, Mathematics and Engineering, Department of Biology
Antibiotic resistance is a significant and continually expanding clinical challenge. Bacteria often gain resistance by obtaining small segments of DNA known as plasmids. However, loss of resistance elements from the chromosome itself was observed in a strain of *Staphylococcus aureus* after treating patients with an antibiotic to which the strain was susceptible. We hypothesize a similar loss of resistance could occur in *Escherichia coli*. *E. coli* strain QH020816-1.1 was isolated by other students in the lab. This strain, after being cured of its plasmids, was susceptible to tetracycline, but resistant to erythromycin, indicating the
The erythromycin resistance gene is chromosomally located. The minimum inhibitory concentration (MIC) for tetracycline was determined, and the plasmid-cured strain was pressured with tetracycline (Â½ MIC) for 10 days, sampling every 24 hours. Erythromycin susceptibility increased over days 1-5, then stabilized over days 6-10. The identity of each subculture as *E. coli* was confirmed, indicating that increased susceptibility was not due to contamination. Further, we confirmed that plasmid DNA was not present in the plasmid-cured strain nor in any of the tetracycline-treated subcultures. Using PCR and gel electro-phoresis, we were able to identify changes in the erythromycin resistance gene after multiple, separate tetracycline treatments, and after treatment with other clinically used antibiotics. These findings support our hypothesis. Current work involves characterizing the specific gene changes. We hope to identify mechanism(s) of reversion that will increase our knowledge of bacterial reversion to susceptibility, which could lead to strategies of antibiotic use that will increase the lifespan of antibiotics.

O5 10:45-11:05

**Forensic Biology in the Media**

Robert King

*Faculty Mentor(s): Dr. Marcy Brown-Marsden*

McCoy College of Science, Mathematics and Engineering, Department of Biology

Forensic biology commonly appears in crime television shows and movies. Depictions of forensic biology vary from fingerprint analysis to using blowfly larva stage development for determining the date of death. Programs can be used for fingerprinting, blood splatter analysis, dating the length of time a body has laid in its resting place, and future data can include ear, lip prints and DNA data when crimes are committed. Television frequently shows fingerprint matching databases and autopsies. But how accurate are fictional television shows at depicting the real-life application of forensic biology? Which movies or television shows have accurate depictions of forensic biology and which do not reflect real life? Various movies and shows are examined in relation to forensic biology practices and guidelines. Current realities and future possibilities are discussed with the application to movies.

O6 11:10-11:30

**Synthesis and Characterization of Two Aryl Substituted Dipyrromethenes**

Hae Lee Han, Stefanie Blaine

*Faculty Mentor(s): Dr. Christopher A. Hansen; Dr. Jianguo Shao*

McCoy College of Science, Mathematics and Engineering, Department of Chemistry

Dipyrromethenes, also known as dipyrins, are a group of organic compounds that have shown great importance in several areas of chemistry due to their ability to act as precursors for macrocyclic molecules like porphyrins, corroles, and BODIPY dyes, all of which have conjugated pi systems that promote an intense absorption spectrum in the visible region. This makes them useful in the field of solar technology, and applicable as photosensitizers in Photodynamic Therapy (PDT) of cancer and as catalysts in chemical reactions. In this project, 5-(4-methoxyphenyl)dipyrromethane and 5-(pentafluorophenyl)dipyrromethane, two meso-aryldipyrromethanes, will be used to synthesize 5-(4-methoxyphenyl)dipyrromethene and 5-(pentafluorophenyl)dipyrromethene respectively via an oxidation-reduction reaction using p-chloranil as the oxidant. The final products are then cleaned and separated using different techniques, and analyzed using electrochemistry and the spectroscopic methods of GC-MS, UV-Visible absorption, and IR.

O7 11:35-11:55

**Study, Analysis, and Acceleration of an N-Body Simulation under Many-Core Environments**

Shady Boukhary

*Faculty Mentor(s): Dr. Eduardo Colmenares*

McCoy College of Science, Mathematics and Engineering, Department of Computer Science

The N-Body problem is a classic problem in physics and astronomy. It serves to predict the evolution of motion of a group of celestial bodies interacting gravitationally. The N-Body problem can be solved most accurately via a Brute Force algorithm. The algorithm can be implemented sequentially – on the Central Processing Unit (CPU) – with a complexity of O(n^2) for one iteration. However, as the number of bodies increases, the problem requires significantly more time to solve. In order to achieve an equally valid
solution but more efficiently, the algorithm can be implemented in Many-Core environments such as a Graphic Processing Unit (GPU). On the GPU, the algorithm can be implemented in parallel, which can potentially have a great impact on the speed and efficiency of the algorithm. The CPU and GPU, excel at sequential processing and parallel processing respectively. Since the N-Body Brute Force algorithm contains isolated instructions, it can be implemented in parallel, exploiting the massively parallel architecture of the GPU. Preliminary results show decent speedup using the GPU version compared to the CPU version, with tests being conducted on two different systems. The first, a desktop computer and its corresponding NVIDIA GPU, the second, a smaller footprint embedded system (NVIDIA Jetson TX2).

Session 1B  9:00 – 11:55 PM          Kiowa Room
O8 9:05-9:25
Above All Else: The Dedication of Ida B. Wells
Cheslin Maloney
Faculty Mentor(s): Dr. Whitney Snow
Prothro-Yeager College of Humanities and Social Sciences, Department of History
Civil rights movements are arguably more prominent and controversial today as compared to the 1920s. This may be, in part, due to the advent of new technologies which aid the commencement of these movements by increasing communication speed. Nonetheless, civil rights movements share commonalities. An individual and/or group raises public awareness of an inequality in a community by speaking out. Then, like-minded persons become attracted to the cause and aid in challenging the authorities with the power to rectify the injustice in question. Victims' voices are heard and injustice is progressively rectified via changes in legislation or policy until the victims can reach a consensus, or tensions between the victims and legislators escalate until either party takes drastic actions like rioting, protesting, and/or warfare. The instigators of civil rights movements, better referred to as pioneers, are often seen at the forefront of the cause, changing their current social landscape in the hope of affording future generations better circumstances. One such pioneer is Ida B. Wells who is best known for her significant contributions to the field of journalism and women's suffrage and anti-lynching movements. Much of Wells' life was thus tied up in advocating for the underrepresented and to the detriment of her personal life. Essentially, she lost her ability to voice her needs and wants because she so frequently served as a voice for others. Ultimately, the cost of her social activism was the retardation of her personal life and individual prospects.

O9 9:30-9:50
Whitewashed Trial: The Case of Emmett Till
Savannah Dickson
Faculty Mentor(s): Dr. Whitney Snow
Prothro-Yeager College of Humanities and Social Sciences, Department of History
The United States of America has often billed itself as exceptional, a bastion of liberty and opportunity. In the 1950s, segregation meant African Americans were denied this and subjected to the tyranny of white oppressors. While historians argue about which event served as the catalyst for the Civil Rights Movement, most agree Emmett Till's Lynching is a serious contender. Accused of whistling at a white woman, fourteen-year-old Till was kidnapped, beaten, shot, and thrown in the Tallahatchie River. His murder was a wake-up call that despite all of the proclaimed progression and equality, Americans still withheld rights from black people. This essay will explore how white bias allowed Till's murderers walk free without punishment despite the brilliance of the prosecution. This farce of a trial served as further evidence that the American court system failed not only Till, but an entire race.

O10 9:55-10:15
Bonnie & Clyde: American Icons
Alyssa Dimmick
Faculty Mentor(s): Dr. Whitney Snow
Prothro-Yeager College of Humanities and Social Sciences, Department of History
Bonnie and Clyde are an infamous American couple from the Great Depression Era. The couple is known for their merciless tag-team robberies and murders. There have been countless movies, television shows,
and books written about the couple. This paper will examine why the American people became so obsessed
with Bonnie and Clyde and why even today the American public idolize these violent young people. Using
several firsthand accounts as well as a few analytic pieces, this paper will break down the timeline of the
couple's fame and determine why the American people became so taken with the couple. One of the factors
that this paper will consider during the examination of the infamous couple is the time period and how this
factor may have had influence over the American public's fascination with them. This paper will also look
at the American leaders of the time and how this may have influenced the wide-spread publicity that
Bonnie and Clyde received. This paper will use firsthand accounts from those who were a part of the same
gang as Bonnie and Clyde and examine several analytical pieces about the couple and America. Utilizing
insight from these sources will aid in understanding the strong appeal of the violent couple. It is important
as Americans that we can self-assess and evaluate our values and ideals. This research is important because
it may help in solving the question “Why are Americans so drawn to the macabre?”

O11 10:20-10:40
Harper Lee and the Go Set a Watchman Controversy
Shady Boukhary
Faculty Mentor(s): Dr. Whitney Snow
Prothro-Yeager College of Humanities and Social Sciences, Department of History
Nelle Harper Lee was an American Novelist. She was born on April 28, 1926 and died on February 19,
2016. She was most known for her novel To Kill a Mockingbird. Her only 2 novels are the afore-mentioned
and Go Set a Watchman. To Kill a Mockingbird won the Pulitzer Prize in 1961 and is still a widely-read
classic in modern literature. In 2007, Lee won the Presidential Medal of Freedom even though she had only
released 1 book at the time of the award. Lee's contribution to literature has had influence as it tackled
racial issues in the South and provided a point of view that helped people understand the South and
southern women. Over 50 years after To Kill a Mockingbird, Go Set a Watchman was released with
controversy surrounding it. It was marketed and released as a sequel to Lee's first novel. However, many
argue that the novel was an early draft of the original novel that was repackaged and released without Lee's
consent. Despite investigations by the State of Alabama that claim to debunk this argument, most of Lee's
close friends, and many reporters maintain that the book was published without Lee's consent, as she was
nearly deaf and blind, as well as in a wheelchair in assisted living. The purpose of this research is to verify
the validity of those claims by studying Lee's life, analyzing other studies, and considering the historical
context.

O12 10:45-11:05
The Iconic Gunslinger: American Hero or Mass Murderer?
Darian Harkcom
Faculty Mentor(s): Dr. Leland Turner
Prothro-Yeager College of Humanities and Social Sciences, Department of History
Gunslingers of the American Wild West, notorious for the quick draw and cold-blooded murder, were
steadily elevated to American heroes in 20th century movies, books, and other forms of popular culture.
Wild Bill Hickok, Doc Holliday, and Billy the Kid were in such literature and entertainment portrayed as
heroes and legends as opposed to depraved murderers. For instance, Hickok was lauded as a legendary
lawman in Kansas where he supposedly introduced law and order to a violent and unruly town. Newspapers
contributed to Hickok's legend. Through their stories those papers enhanced and perpetuated Wild Bill
mythology. Doc Holliday, a famous gunslinger in his own right, was portrayed as a quick to the draw
gunman and shrewd poker player. Historians have argued that conceivably Holliday may have killed over
twenty men. And, despite his association with lawman Wyatt Earp, he was himself on the run because of a
murder charge. Finally, in a very short life it is alleged that Henry McCarty, a.k.a. Billy the Kid, murdered
some twenty-one people. Nevertheless, the Kid, like so many other murderous gunmen in the American
West, has been celebrated in Hollywood movies and popular culture. Such treatment has transformed these
sociopaths into icons of legend and lore. These men were, in fact, cold-blooded mass murderers. The
historical evidence surrounding these Wild West characters belies their celebrated status in the annals of
American folklore.
Suicide among Service Members in the Turkish Armed Forces: A Social Control Perspective
Ricky Yeager
Faculty Mentor(s): Dr. Suheyl Gurbuz
Prothro-Yeager College of Humanities and Social Sciences, Department of Sociology

The present study asked whether and how social-bond factors and self-control factors affect suicide by members of the Turkish armed forces, a key institution in Turkey, where all male citizens complete mandatory military duty. To implement the study's 2-stage sampling design, first we randomly selected a sample of troops serving in Turkey's 4 military branches, the army, navy, air force, and gendarmerie. This sample proportionally represented the military's makeup by the 4 branches. From it, we then chose randomly a subsample from each group, obtaining a final sample of 4,461 men. Each participating service member self-administered a questionnaire approved by the institutional review board of Gulhane Military Medical Academy's Psychology and War Psychiatry Department located in Istanbul. Data from this Mehmetcik 2015 Field Study survey was subjected to logistic regression, and results showed participants' suicidality to be inversely associated, overall, with self-control and social-bond factors. Suicidality also differ by military units being served. An implication of the results is that suicide prevention for service members could usefully target young men prior to conscription and persisting into their first months of military duty, aimed at enhancing their social bonds and self-control.

Masculinity and School Shootings
Dustin Echols
Faculty Mentor(s): Dr. Suheyl Gurbuz
Prothro-Yeager College of Humanities and Social Sciences, Department of Sociology

School shootings play a pivotal role in our current society. Young, mostly white, males are almost solely responsible for these events, creating a profound inequality relating to gender and school shootings and violent crimes as a whole. Although crime has dropped steadily since 1990, school shooting are an outlier and continue be problematic with no signs of slowing. Gender roles and the traits associated with them have, in the past 40-50 years, become an important topic in Psychology and Sociology. Focusing on masculinity and the role it plays in school shootings, our perceptions, the perceptions and behaviors of the perpetrators, and our role as a society are important factors to discuss. Masculinity can be linked to the main social responses that arise after an event, such as gun control and mental health, but gender roles and masculinity are seldom mentioned on its own, or listed as possible cause. Changing our social perceptions of gender in the long term and taking a vested interest in the people around us, as well as, implementing threat assessment in the short term are good milestones to implement to start counter acting this issue.

Hyperledger/Blockchain and Fraud: The Good, the Bad and the Ugly
Kaushik Shah
Faculty Mentor(s): Dr. Paul San Miguel
Dillard College of Business Administration, Department of Accounting & Management Information Systems

Blockchain is a developing technology wherein currency transactions are recorded in a public digital ledger. Distributed ledger technology (DLT) is an emerging technology which uses blockchain technologies to digitally record all aspects of financial and non-financial transactions. Because these technologies keep digital records of transactions in multiple nodes, DLTS and the information on transactions they store have been labeled as indelible and immutable. As a result, accounting professionals have begun to describe the impact DLTs will have on the profession as facilitating the audit process by significantly reducing the cost and time, or effectively automating the auditing of financial statements. While some of types of fraud may be mitigated within the DLT environment, fraud and other types of fraud could still be possible, and consequently while some areas of the audit may be facilitated, exhaustive and
vigilant audits will still be required in the DLT environment. Further, if the accounting profession understands the limitations of DLT the quality of financial statements can be improved. Hence, the purpose of this research is to explain what is blockchain and Hyperledger, distinguish blockchain from cryptocurrency, and describe how fraud can still be committed in DLT environment.

O16 9:30-9:50
**Commercial Real Estate Lending among Community Banks: An Empirical Assessment**
Federica Bove
*Faculty Mentor(s): Dr. John Martinez ; Dr. Robert Forrester*
Dillard College of Business Administration, Department of Management, Marketing, & Legal Studies
U.S. banks have increased their commercial real estate (CRE) lending significantly over the past five years. While economists and regulators see some positive aspects in this trend, they also see potential risks, especially given the role of real estate lending as a precipitating factor in past loan performance. At present, there doesn't appear to be much attention devoted to any potential risks from current trends in commercial real estate lending. To the degree that there has been concern, it's mostly centered about the role of the nation's largest financial institutions, with scant attention devoted to community banks. This study focuses on commercial banks that are designated to have a 'Commercial Lending Specialization (CRE)' by the FDIC. These banks are compared to a geographically matched set of non-specialty banks. Only those counties with one CRE and one non-CRE bank are included in the sample. In the U.S., there are 620 counties which met this criterion. Annual, year-end data are collected for each bank (2 per county) for five years, 2013 through 2017. This study focuses on the role of deliberate risk-taking as a causal factor in the varying degree to which community banks' participate in commercial real estate (CRE) lending.

O17 9:55-10:15
**The Impact of NWTSBDC Centers on Entrepreneurial Success: A Comparative Study**
Simon Ospina
*Faculty Mentor(s): Dr. Scott Manley; Dr. Geoffrey Clegg*
Dillard College of Business Administration, Department of Economics, Finance, & General Business
The purpose of this research is to analyze the existing literature of guided preparation by conducting a six-year comparative study analyzing the sales growth of six cohort centers in the Northwest Texas SBDC (NWTSBDC) region. In prior studies, impact reports analyzing sales growth and other dependent variables have demonstrated the impact of multiple SBDC centers grouped together in a single model. As a result, such studies are subject to problems associated with the granularity of the data when considering the impact of a single SBDC office. This research proposes to solve for the granularity issue present in prior impact studies by dis-integrating sales growth data from a regional to a local perspective; thereby constructing impact models for local SBDC centers. The results suggest that after dis-integrating the data from a regional to a local perspective, the study is no longer valid. We concluded that the high levels of dispersion within the sample led to the model’s inaccuracy. However, by using a model with observations that are less fluctuant we believe the intended methodology would become more accurate.

O18 10:20-10:40
**Student Retention Issues at MSU Texas**
Korey Beaver, Pete Lerma, Michael Davis, Chandler Johnson
*Faculty Mentor(s): Dr. Thuy D. Nguyen*
Dillard College of Business Administration, Department of Management, Marketing, & Legal Studies
This study investigates factors influencing freshmen and sophomores to complete degrees at MSU Texas. The study surveyed 720 students. Using descriptive statistics, regression, and ANOVA, the study shows that freshmen and sophomores dropping out of MSU Texas due to the lack of connection, friendship, and college town at MSU. In addition, students also need peer mentoring, study skills, and stress management programs to be able to complete the degree at MSU. Major and career advising are also important factors. Practical implications are also suggested.
Organizational Citizenship Behaviors in Millennials: An Exploratory Study and Measurement Development
Federica Bove, Ashley Baird
Faculty Mentor(s): Dr. Shih Yung Chou; Dr. Charles Ramser
Dillard College of Business Administration, Department of Management, Marketing, & Legal Studies

Since its inception nearly thirty-five years ago, organizational citizenship behaviors (OCBs) have received a tremendous amount of scholarly and practical attention because OCBs facilitate and enhance organizational functioning. Due to the development of various OCB conceptualizations, several OCBs scales have been constructed. It is noteworthy that the existing OCB scales were developed using generations prior to the Millennial generations. Given that Millennials are entering the workforce with different sets of work-related attitudes and beliefs compared to those of previous generations, it becomes critical to understand what constitutes OCB from the Millennial's perspective and, subsequently, develop a new measurement scale that is suitable for capturing Millennials' OCB at work. Given this gap in this literature, we attempt to conceptualize OCB from the Millennial's perspective and construct an OCB scale intends for measuring Millennial employees' OCB. Following proper scale development steps, we construct a preliminary Millennial OCBs scale with 38 question items using a 7-point Likert scale. After conducting expert reviews and pilot tests, we perform exploratory factor analysis (EFA) with a sample of 193 Millennial workers. The results of EFA reveal 5-dimensional OCBs, namely intellectual stimulation, organizational servantship, empathetic responsiveness, and social responsibility. Additionally, findings of EFA shortened scale with a total of 15 question items.

Power of the Peacemakers: Mediation in a Global Economy
Jordan Entler
Faculty Mentor(s): Dr. Charles D. Bultena
Dillard College of Business Administration, Department of Management, Marketing, & Legal Studies

The global judicial scene is dismal with courts overrun under a burgeoning case load. Mediation, a process whereby a neutral third party works to resolve conflict between parties, has exploded worldwide as an alternative to court litigation. Stories Mediators Tell – World Edition (Love & Parker, 2017) is the most extensive collection of global mediation stories ever assembled. Twenty-four top international mediators were asked to write about moving, successful, unsuccessful, happy, sad and funny mediations. Their true stories portray diverse conflicts from around the world, conveying the power of mediation across cultures. This presentation explores the remarkable ingenuity these mediators (Peacemakers) employed in not only resolving extreme conflict, but in reconciling the parties. It zeroes in on three key sections of the book. Finding the Hidden Vein of Gold highlights the need for mediators to dig deeper into the conflict to uncover “the hidden vein of gold.” Breaking through intractable, bitter conflict to understand and address root causes is the key to resolution and reconciliation. It’s About the Encounter, Not the Agreement demonstrates the power of connection. Breaking down impasses and interpersonal barriers to reconnect parties who once had a relationship (personal or professional) is shown to be more important than obtaining any particular solution. Finally, Mediation Can Be Magical deals with the art of deliberating violent conflicts. Mediators employ uncommon generosity and connection that is often reciprocated in gratitude by the other party to yield magical results. This presentation provides a ray of hope and a positive direction for anyone who struggles with the frustration of finding themselves in situations of conflict.
Forecast of the spot exchange rate between the U.S. Dollar and the United Kingdom Pound

Kaushik Shah

Faculty Mentor(s): Dr. Pablo Garcia-Fuentes; Dr. Joseph Smalley

Dillard College of Business Administration, Department of Accounting & Management Information Systems

International transactions can be risky because they require exchanging the domestic currency for a foreign currency or vice versa. In the case of a U.S. exporter that exports his products to the United Kingdom, he would be paid in pounds and would have to exchange the pounds for U.S. dollars. Sometimes the exporter, after he has shipped his products to the importer, would be paid at a later date. Given that the value of the dollar in terms of UK pounds changes every second, the U.S. exporter may end up losing money. This suggests that it would be important to know the future value of the dollar in terms of the UK pound. This may allow the U.S. exporter to make adjustments on the prices of his goods and reduce the risk of losing money due to currency exchange. This also suggests that exchange rate forecasting can be an important tool to assess the risk and benefit of conducting international transactions. In this research, we forecast the spot exchange rate between the U.S. dollar and the UK pound. The data used covers the period from 2000 to 2019. We use the following SAS forecast methods: the stepwise autoregressive method, the double exponential smoothing method, the multiplicative winters method, and the addwinters method. Given the appropriate tests, we will choose the method that does the best forecast.

Forecast of the Standard and Poor's (S&P) 500 index

Carolynda Welcome

Faculty Mentor(s): Dr. Pablo Garcia-Fuentes; Dr. Joseph Smalley

Dillard College of Business Administration, Department of Economics, Finance, & General Business

The forecasting of the Standard and Poor’s (S&P) 500 index has been an interest of many researchers. This is related to the fact that the S&P 500 represents the stock market since it is the average of 500 stock prices. Some research focuses on forecasting daily values of the index (Majhi, Shalabi, and Fathi, 2005). Other research focuses on forecasting the volatility of the index in order to measure and forecast the stock market volatility while using the Generalized Autoregressive Conditional Heteroskedasticity model (GARCH) (Martens, 2002). This suggests that forecasting the daily value of the index may give an understanding of the behavior of the stock market. In this research, we forecast the daily value of the index using data for the period from 2009 to 2019. The forecast methods used are: the stepwise autoregressive method, the double exponential smoothing method, the multiplicative winters method, and the addwinters method. Based on the mean squared error and the mean absolute percent error, we choose the method that does the best forecast.

Forecast of the spot exchange rate between the Swiss Franc and the U.S. Dollar

Erick Gamboa

Faculty Mentor(s): Dr. Pablo Garcia-Fuentes; Dr. Joseph Smalley

Dillard College of Business Administration, Department of Economics, Finance, & General Business

International trade, foreign direct investment, and currency trading are international transactions that have been increasing due to the Globalization. Even though these transactions can contribute to increasing the wellbeing of people, they are not riskless because they imply exchanging one currency for another. In some cases, exporters ship their goods and are paid at a later time. This implies that if a U.S. exporter does not engage in hedging, she may not be insulated from losses due to changes in the price of the U.S. dollar in terms of foreign currencies. In the case of currency traders, they make profits by buying currencies at lower prices and selling them at higher prices. Given this, it is important to understand the behavior of the exchange rate, or to predict the future value of a currency. In this research, we forecast the spot exchange rate between the Swiss franc and the U.S. dollar. The data used covers the period from 2000 to 2019. We
use the following SAS forecast methods: the stepwise autoregressive method, the double exponential smoothing method, the multiplicative winters method, and the addwinters method. Given the appropriate tests, we will choose the method that does the best forecast.

DCOBA SSO4 2:20-2:40
Forecast of the spot exchange rate between the Euro and the U.S. Dollar
Federica Bove
Faculty Mentor(s): Dr. Pablo Garcia-Fuentes; Dr. Joseph Smalley
Dillard College of Business Administration, Department of Management, Marketing, & Legal Studies
International trade and foreign direct investment are important international transactions between the United States and the European Union. Americans consume products that are manufactured in Europe and Europeans consume U.S. products. In addition, Americans invest in Europe, while Europeans invest in the United States. Regarding financial investment, when the U.S. interest rate is higher than the European interest rate, Europeans may be willing to invest in the United States. However, when the European interest is higher than the U.S. interest rate, Europeans would be willing to sell their U.S. financial instruments and invest in Europe. Note that these transactions imply exchanging Euros for U.S. dollars, or U.S. dollars for Euros given the exchange rate. In addition, exporters and importers in Europe and in the U.S would have to exchange either euros for dollars or dollars for euros at the given exchange rates. This suggests that it is important for investors, exporters, and importers to understand the behavior of the exchange rate between the euro and the U.S. dollar. In this research, we forecast this exchange rate using the following four SAS forecast methods: the stepwise autoregressive method, the double exponential smoothing method, the multiplicative winters method, and the addwinters method. The data used covers the period from 2000 to 2019. The main results will come from the method that does the best performance.

DCOBA SSO5 2:45-3:05
Forecast of the National Association of Securities Dealers Automated Quotations (NASDAQ) index
Jacob Elder
Faculty Mentor(s): Dr. Pablo Garcia-Fuentes; Dr. Joseph Smalley
Dillard College of Business Administration, Department of Economics, Finance, & General Business
Stock market indexes are indicators of the performance of the economy. When the economy is expanding, the values of the indexes rise in general. One stock market index is the National Association of Securities Dealers Automated Quotations (NASDAQ). The index represents a weighted market value of more than 3,000 common equities. The price of the index changes every second as the demand for some of the stocks included in the index increases or decreases. This suggests that understanding the behavior of the NASDAQ index can help to understand the behavior of the U.S. economy. This has been an incentive for some researchers to conduct forecasting of the NASDAQ index (Josepha, Larrainb, and Turnerc, 2017). This research focuses on forecasting the daily value of the NASDAQ index using data for the period from 2000 to 2019. It uses four SAS forecast methods such as the stepwise autoregressive method, the double exponential smoothing method, the multiplicative winters method, and the addwinters method. The best performing method is chosen based on the mean squared error and the mean absolute percent error.

DCOBA SSO6 3:10-3:20
Forecast of the spot exchange rate between the Japanese Yen and the U.S. Dollar
Zanu Laudat
Faculty Mentor(s): Dr. Pablo Garcia-Fuentes; Dr. Joseph Smalley
Dillard College of Business Administration, Department of Economics, Finance, & General Business
The exchange rate is the price of the domestic currency in terms of a foreign currency, or the price of a foreign currency in terms of the domestic currency. In the case of the exchange rate between the Japanese yen and the U.S. dollar, it is the price of the yen in terms of the U.S. dollar. Studying exchange rates is important because there is no independent economy in the world. That is, the economies of the world are open and engage in international trade and foreign direct investment activities. Understanding the behavior of exchange rates is important to exporters, importers, and foreign investors. This has been an important factor that has promoted research that aims at explaining the behavior of exchange rates. Exporters,
importers, and foreign investors may be interested in knowing the future value of the exchange rate since they may have to engage in future transactions. In this regard, some research aims at explaining the relationship between the spot and the forward exchange rates (Thornton, 2019; Zhou, 2002). This research focuses on forecasting the spot exchange rate between the Japanese yen and the U.S. dollar. The data used covers the period from 2000 to 2019. We use the following four SAS forecast methods: the stepwise autoregressive method, the double exponential smoothing method, the multiplicative winters method, and the addwinters method. The main results will come from the method that does the best performance.

DCOBA SSO7 3:25-3:45
Forecast of the spot exchange rate between the Chinese Yuan and the U.S. Dollar
Zihao Wu
Faculty Mentor(s): Dr. Pablo Garcia-Fuentes; Dr. Joseph Smalley
Dillard College of Business Administration, Department of Economics, Finance, & General Business

Globalization has been contributing to increasing international trade, foreign direct investment, and currency trading. In the case of China, it has become the largest exporter in the world and an important foreign direct investor. However, engaging in these international transactions requires currency exchange that can cause economic losses. This is associated with changes in the price of a domestic currency in terms of a foreign currency. Thus, having knowledge about the future value of a currency is very valuable to exporters, importers, and foreign direct investors. In this regard, there are different methods that can be used to predict the value of currency, and econometric methods are tools that can be used to forecast the value of a currency. These techniques allow for using time series data to predict the future value of a currency. In this research, we forecast the spot exchange rate between the Chinese yuan and the U.S. dollar. The data used covers the period from 2000 to 2019. We use the following SAS forecast methods: the stepwise autoregressive method, the double exponential smoothing method, the multiplicative winters method, and the addwinters method. Given the appropriate tests, we choose the method that does the best forecast.

Session 2B 12:30 – 3:00 PM Kiowa Room
O21 12:35:12:55
Mobile wireless surveillance system with unpredictable motion
Juwel Williams, Darrell Middleworth, Mamgoree Sock, Virgil Henry
Faculty Mentor(s): Dr. Sheldon Wang
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

A major issue most company owners have to be aware of is their safety; whether it is important information, employees or their products, they will be forced to employ a security personnel or the traditional camera system at a high cost in order to secure their assets. The aim of our project is to better protect the critical assets of companies by implementing a 'Mobile Wireless Surveillance System with Coherent and Unpredictable Motion' which will reduce the issues of theft and the cost of traditional surveillance equipment. The System is made up of a compact mobile vehicle (surveillance drone on rails) designed to move horizontally along a track (similar to a train) in a random/unpredictable motion. This vehicle will be equipped with a high-resolution camera inclusive of digital zoom and night vision which will be used to monitor the property even under the cover of darkness. A single vehicle will cover a much wider range when compared to traditional camera systems. The system will be programmed to operate with a coherent and unpredictable motion in order to ensure constant movement of the vehicle along the track in a way that makes its location/position difficult to predict by persons aiming to gain illegal entry into the companies. The system will be powered with clean 'green' energy via a compact solar power and wind turbine system.
A Bionic Robot Hand with Force Feedback
Nchetauchukwu Anih, Kenneth Griffin, Chance Craig, Dieonna George
Faculty Mentor(s): Dr. Yu Guo
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

For this project, we designed and built a bionic hand that provides feedback for any amount of force impacted on the hand through the incorporation of force sensing resistors. Robots are increasingly being integrated into many industries such as manufacturing, medical and defense. However, there still exists the potential for bionic robotic hands to improve. From our research and our experience in robotics, we were able to design a bionic hand with 20 degrees of freedom. Aside from force sensing resistors, we also implemented a strain gauge to improve the force feedback control system. Unlike the human hand, robotic hands must use a series of sensors to copy the sensations normally received by a human's brain. Therefore, in order to read the resistance, a raspberry pi computer and a few instruments are used to improve the signal output. The raspberry pi helps provide a fast and effective communication between the servo motors, the MCP3008 A/D converter, the force sensing resistors, and other devices used to build the robot. When a human lifts an object, which is heavier than expected, a series of neurons will connect to tell the muscles to contract further and apply an appropriate amount of force to lift an object. For a robot hand, the amount of force a robot hand can lift or handle has to be calculated as well as how fast the robot can complete its given tasks.

Design and Implementation of a Bionic Robot Arm
Nicholas Wolf, Michael Sweeting, Jomarie Leblanc, Omar Clarke
Faculty Mentor(s): Dr. Yu Guo
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

The field of modern robotics has been around for many decades, and is widely studied. Robotic devices have been implemented in a number of wide ranging applications, such as robot assisted surgery, autonomous vehicles, robots used for machining and manufacturing, and the list of applications grows as time passes. One, more specific, field of robotics that is currently being studied is the field of humanoid robotics. The objective of humanoid robotics is to develop human-like machines that can mimic the functionality of our biological limbs. A bionic robotic arm, is essentially a robotic arm that is designed to function similarly to a human arm. Our robotic arm features 5 degrees of freedom, and uses 5 servo motors to achieve these degrees of freedom. The design of our bionic robot arm is centered around using both aluminum for structural support, and lightweight 3D printable material to act as a housing around the internal components. Our bionic robot arm utilizes a Raspberry Pi, programmed with Python, to control the movements of the servo motors. Each motor, and therefore each degree of freedom, can be controlled individually and also simultaneously. This setup results in fluid movements, resembling the movement capability of the human arm.

Automated Pencil Sharpening with Vision Inspection
Calvert Aaron, Parth Sagpariya, Jedesh Chandrasegaran, Afolabi Adereti
Faculty Mentor(s): Dr. Jan Brink; Dr. Yu Guo
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

The automated pencil sharpening robotic system is a complex network of robotics, pneumatics, sensors, and a Cognex vision camera all working together. This system will showcase how automation can boost productivity, increase consistency and improve quality. The work cell consists of a centrally placed Kawasaki robot that will pick up a pencil from a palette with unsharpened pencils. The Kawasaki robot will carefully place the pencil on a clamp that will be extended into an electrically operated sharpener. Once the sharpening process is completed, the clamp feeder cylinder will retract. Subsequently, the robot will pick up the sharpened pencil and then place it into another palette labeled 'sharpened pencils'. This process will be repeated for all the unsharpened pencils. The robot randomly picks up a pencil from the sharpened pencils palette, and then writes 'MSU' on a mounted piece of paper. The paper is extended towards a Cognex vision camera that inspects and verifies that the writing is legible according to the set standards. If
the writing passes the inspection, the pencil will be returned to the sharpened pencil pallet and the sharpened pencil pallet will extend out of the robotic work cell. If the writing fails inspection, the pencil will be placed into a defective bin. The sharpened pencils from this project will be given away for recruiting purposes to aspiring high school students, wanting to become MSU engineering students.

O25 2:15-2:35

**Non-Servo PLC Operated Pick and Place Pneumatic Robot**

Bryan Rutledge, Jenom Pyeng, Frankline Akech, MiKyle Percentie  
*Faculty Mentor(s): Dr. Jan Brink*

McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering  

The purpose of this project is to design and build a non-servo, pick and place, pneumatic robot as part of a larger work cell, it includes a hopper that feeds work pieces into the work envelope. The robot is controlled using a programmable logic controller (PLC), and features additional inputs and output displays on a Human Machine Interface (HMI). The robot performs simple pick and place actions that are applicable in the manufacturing industry. The authors developed Solidworks drawings and a model for the robot and then had the required parts made in the machine shop of the McCoy School of Engineering. The design of the pneumatic circuit was considered, and has components such as a cylinder, a rod-less cylinder, a rotary actuator, a rack and pinion type rotary actuator, and solenoid operated directional control valves. The expected results are a fully functional work cell, which features a robust robot, controlled by a PLC and an HMI. The robot has four degrees of freedom. These degrees of freedom are: raise and lower; rotate left and right; extension and retraction; and wrist roll clockwise and counter-clockwise. It also features a hopper and a cylinder that will insert the work pieces into the work envelope. The authors ordered all the required parts to build the overall design and began construction, which will conclude this semester. The robot will undergo a testing phase.

O26 2:40-3:00

**Robot Soccer Using Artificial Intelligence**

Joshua Washington, Carson Conrady  
*Faculty Mentor(s): Dr. Yu Guo; Dr. Jeong Tae Ok*

McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering  

This project is designed to enable a team of robots to recognize objects and to react autonomously. Robots will use a neural network which will enable them to recognize objects in various environments. By training the neural network with positive and negative data sets, each robot will become better at identifying specific objects through pattern recognition. The visual processing will take place on a Raspberry Pi microcomputer board through programs we have written and the use of libraries for OpenCV and Kondo robots. By using the camera, image recognition training, and a distance-estimation algorithm, a robot will be able to determine its position relative to recognized objects, which would provide it with the information necessary to approach a ball or to target the goal. We use Bluetooth communication from the Raspberry Pi to send instructions to the robot's servo motor driver which drives individual servo motors, therefore controlling the overall motion of the robot. We will write a decision-making algorithm to allow the robot to determine which actions to perform. When a specific set of conditions is met, the decision-making algorithm will trigger an appropriate motion, such as walking forward, turning, or kicking the ball. Multiple robots will operate separate visual feedback systems to enable individual action, and they will communicate wirelessly to enable cooperative interaction. The final goal of each robot is to use its vision to determine when and how to properly react with other robots to play a strategic game of soccer.
O27 10:15-10:35
Annotated Translation of Andreyev’s *The Red Laugh* with Scholarly Apparatus
Jessica Odom
Faculty Mentor(s): Dr. Kirsten Lodge
Prothro-Yeager College of Humanities and Social Sciences, Department of English, Humanities, & Philosophy

*The Red Laugh* written by Leonid Andreyev in 1905 impresses on its readers the horrific and maddening nature of war. The experimental novella was popular and controversial. This study intends to analyze the novella, review critical essays and contemporaneous works, and determine what contextual materials should be included in a scholarly volume. Following a grounded theory study methodology, this project requires a broad and comprehensive review of materials to develop the final product, an annotated translation of *The Red Laugh* with scholarly apparatus. The researchers read the novella and other short stories by Andreyev to become familiar with his writing style and recognize the qualities that distinguished *The Red Laugh*. They reviewed biographies of Leonid Andreyev to discover what elements are known to have influenced his life and work. The researchers then used databases to find materials related to the author, the novella, and the historical period from which they proceed. These methods have led to the discovery of *In the War* by Vickenty Veresaev and *The Crowd: A Study of the Popular Mind* by Gustave Le Bon. In his memoir, Veresaev describes the horrors of the Russo-Japanese War, a war that had a significant influence on *The Red Laugh*. Published in 1895, Le Bon's study posits that humans are subjected to the degenerative powers of the subconscious when they form a mob or army, a decadent belief that is exemplified in Andreyev's novella. The researchers continue to work toward crafting a scholarly volume that will benefit future students.

O28 10:40-11:00
This Is the Game That Moves as You Play: Punk, Pop, and Post-Punk
Carrie Horton
Faculty Mentor(s): Dr. Todd Giles
Prothro-Yeager College of Humanities and Social Sciences, Department of English, Humanities, & Philosophy

'This is the Game that Moves as You Play' explores the post-punk music and culture of the late 80s and early 90s in order to understand the commercial and cultural forces that shifted the punk movement of the late 70s and early 80s towards the more commercially palatable post-punk, which was suitable for the new middle-American MTV audience. Conducting a survey of the post-punk musical and cultural scene, I explore how the ideals of punk – rage against capitalism and commercialization – were embraced by post-punk, which rejected the latter's grittiness in favor of a more glossy synthetic style, resulting in offshoots such as new-wave and synth-pop. However, by the mid-90's, the original punk aesthetic roared back in sound, message, and appearance. Bands from the post-punk era such as Green Day continue to perform and produce under an ethos of radical tolerance, while bands such as Sonic Youth and Nirvana represent the grungy pinnacle of post-punk. Modern punk survives in much more inclusive forms through the likes of Ezra Furman and Laura Jane Grace, both beacons of radical existence and self-identification who, like their predecessors, preach non-conformity.

O29 11:05-11:25
Will There Really Be an 'Eternity'?
Alex Rios
Faculty Mentor(s): Dr. Todd Giles
Prothro-Yeager College of Humanities and Social Sciences, Department of English, Humanities, & Philosophy

American Romantic poet Emily Dickinson (1830-1886) is best known for her concise and witty romantic and spiritually-centered poems. 'Will there be an Eternity' explores Dickinson through the lens of ecocriticism, an earth-centered critical approach which studies the relationships between literature and the environment, with an eye towards her personal spiritual journey. Dickinson, who is known to have been...
more spiritual than religious, oscillates in her poems between believing in a heavenly life after death vs. relying on the here-and-now of the natural world for a heavenly experience. Examining 'Four Trees – Upon a solitary Acre,' 'I taste a liquor never brewed,' 'Some keep the Sabbath going to Church,' and 'Will there really be a 'Morning,' I argue that Dickinson's dependence on the natural world stems from an overwhelming uncertainty regarding her religious beliefs, particularly those of a possible afterlife.

O30 11:30-11:50

**Malevich's Suprematist Art Decorates Zamyatin's Dystopian World**

Lane Riggs

*Faculty Mentor(s): Dr. Kirsten Lodge*

Prothro-Yeager College of Humanities and Social Sciences, Department of English, Humanities, & Philosophy

The dystopian novel *We*, completed by Yevgeny Zamyatin in 1921, is modernist; the author himself refers to it as neorealist or synthetist. Because of Zamyatin's modernist aesthetics, there are many similarities between *We* and Russian avant-garde artworks of the early twentieth century: Zamyatin's use of lines and colors is most comparable to that of Futurist Kazimir Malevich, who relied on geometric shapes and utilized distinctive colors like red, black, and green in his paintings. In *We*, red, black and green symbolize the past and boldly contrast with the dull gray that symbolizes the modern world of the One State. Similarly, colors are associated with specific characters, as black represents I-330 and pink, O-90. Zamyatin's literary essays refer frequently to energy and entropy: in this light, the dull gray represents static entropy, while the dynamic greens and reds give off energy. Malevich also believed color had energy (and therefore movement). Geometric shapes are a focal point in Malevich's Suprematist paintings, and, similarly, Zamyatin associated shapes with certain character's features, such as the paper-thinness of the doctor, the cross on I-330's face, and O-90's round, blue eyes. In this paper I will investigate the role of geometric shapes and colors in both Malevich's Suprematist works and Zamyatin's modernist novel, pointing out similarities in the two artists' approaches. In this presentation I will investigate the role of geometric shapes and colors in both Malevich's Suprematist works and Zamyatin's modernist novel, pointing out similarities in the two artists' approaches.

O31 11:55-12:15

**Black Diamonds in the Eye of Texas: Organized Labor and Management Tactics in the Newcastle Coalfield**

Nathan Endo

*Faculty Mentor(s): Dr. Leland Turner*

Prothro-Yeager College of Humanities and Social Sciences, Department of History

In 1907, Joseph Kemp and Frank Kell began construction of the Wichita Falls and Southern Railway Company, a spur that linked the coal fields in Newcastle, Texas with their business interests fifty miles northeast in Wichita Falls. In that same year Kemp and Kell formed the Belknap Coal Company and by 1908 the company sank its first shaft in the Newcastle fields. However, in February 1909 dangerous working conditions and paltry wages encouraged all fifty-six Belknap miners to strike and on August 27, 1909 those workers officially formed a local chapter of the United Mine Workers of America. The Belknap Company eventually recognized the union and the strike ended in early 1910. Because of continuing labor difficulties a twenty-two month long strike from 1914-1915 encouraged mine officials to import strikebreakers from Alabama. According to historian Tonja Berry, hostilities ensued between union and non-union workers and persisted in Newcastle for decades. The events at Newcastle serve as a labor movement case study in Texas at the turn of the twentieth century. An analysis of Newcastle’s development and management practices at the Belknap mine creates a better understanding as to why organized labor was unable to effectively combat corporate power in Texas.
The Life of Fannie Lou Hamer
Kishelle Licerish
Faculty Mentor(s): Dr. Whitney Snow
Prothro-Yeager College of Humanities and Social Sciences, Department of History
Fannie Lou Hamer was a humble but powerful African-American civil rights activist who was born and raised in the Mississippi Delta. A sharecropper's daughter and one of twenty children, she spent most of her childhood picking cotton. This essay will study the life of Hamer from her early childhood as a plantation worker to her civil rights activism. During the late 1960s and 1970s, her perseverance and passion led her to be named one of the most noted and influential black activists in American history. Before her intervention, Mississippi was in turmoil as blacks were oppressed, victimized politically and racially. This encouraged Hamer to become politically engaged by becoming a community activist and serving as a field secretary for the Student Non-Violent Coordinating Committee. In 1963, she was almost beaten to death by police. In 1964, she served as Vice Chair of the Mississippi Freedom Democratic Party. At one point she said that if the MFDP was not seated at the Democratic National Convention instead of the mainstream Democratic Party, 'I question America.' That same year, she ran for the U.S. Senate, but lost. She continued to fight for civil rights for the rest of her life before dying of cancer in 1977. Hamer was a formidable woman who risked life and limb to achieve equality. Her resolve in life is best depicted by her tombstone which contains one of her most famous quotes: 'I am sick and tired of being sick and tired.'

Woodstock Revolution
Landon Parks
Faculty Mentor(s): Dr. Whitney Snow
Prothro-Yeager College of Humanities and Social Sciences, Department of History
The Woodstock Music and Art Fair occurred in August 1969 in a rain-soaked, muddy field at a small dairy farm in upstate New York. Nearly 500,000 people attended the festival in which some of the most prominent bands of the time performed. Those who attended the concert are often referred to as 'hippies,' individuals who valued peace, opposed war, and believed this music festival encapsulated their existentialism. Woodstock is still esteemed as possibly the most pivotal musical event in U.S. history. But with all that said, media coverage seemed to focus solely on the negative logistics of the bands, the congestion, the lack of public safety measures, and the poor weather. Coverage rarely addressed who actually attended, how they experienced the festival, and how they viewed its music and role in America history. The cultural climate of Woodstock left a lasting impact on the young men and women who witnessed its wonder. It remains one of the most significant and controversial events in twentieth-century American history. Although the media depicted Woodstock as a place for long-haired hippies who preached 'make love, not war,' those who actually attended the festival argue that it symbolized a countercultural revolution where outliers of society came together to shift Americans' views away from complacency toward acceptance and understanding.

Dreaming of the Field
Craig Tidmore, Mekala Conway, Leo Gonzales, Abby Jetton
Faculty Mentor(s): Asst. Prof. Jonathon Quam
Fain College of Fine Arts, Department of Mass Communication
After losing the ability to continue playing baseball at the age of 18, Leland Wetzel had to forge a new dream for himself. Although he attended college, graduated and worked towards a traditional career, it wasn't until he discovered a passion for woodworking that he realized he might still live out his dream of working in professional baseball. Leland now has a business making professional grade baseball bats. Through interviews and observation, this documentary examines what it takes to find a path to a dream you once lost.
Wine making is an art as ancient as human culture. Across the globe, people have been making wine from different ingredients and spreading their ideas through the generations. Although Texas is home to many wineries, it is still not a custom associated with the rough image of the state. Horseshoe Bend Cellars is one of those Texas wineries trying to make a name for itself in a region more known for drought than vineyards. Napa, Texas explores the goals of the family who runs this business and finds inspiration in their varied backgrounds.

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Child advocates are the protective barrier between the threats of the real world and the confusing time of childhood growth. The Guardians of the Children is a motorcycle club dedicated to being that protective barrier. These men and women place themselves between abused children and the threats ever present in their life. This narrative documentary examines the relationship between the Guardians and those they protect, exposing the difficult reality that must be dealt with when fighting child abuse.

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A young man takes a strange office job, leading him down a path that forces him question his control over his life and the world around him. This is the presentation of Tyler and Sam’s short film, Imperium. The presentation will include a brief overview of the filmmaking process and their experience developing a professional short film. After their breakdown of the work it took to complete the project and what they gained from it, they will present the finished film itself.

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Huey 'Kingfish' Long was a prominent figure in Louisiana politics, and left behind a legacy of transformation and corruption. Long positively influenced the education system, healthcare, and other programs of Louisiana, but his quest for power has led to contested views about his overall characters. Despite Long's dubious methods, his impact on Louisiana was highly beneficial. Long began his aggressive career with the Louisiana Railroad Commission. He gained the seat of governor and was eventually elected to the U.S. Senate. Throughout his political career, Long was often accused of being a dictator and made many enemies, not the least of which was President Franklin Roosevelt. He passed myriad questionable policies and bills and proved discriminatory when it came to the African-American community. To this day, Long is often remembered as a power-crazy politician motivated by self-interest. However, Long was a multi-faceted man and this paper will explore some of the events that led him on the trek to becoming one of the most controversial politicians in U.S. history.
Viola Liuzzo: The Ice Breaker to Gender Stereotypes
Amanda Threlkeld

Faculty Mentor(s): Dr. Whitney Snow
Prothro-Yeager College of Humanities and Social Sciences, Department of History

During the Civil Rights Movement, Viola Liuzzo, a white activist from Detroit, was shot by a Ku Klux Klan member for being in a vehicle with an African-American man. This presentation examines how the life and death of Liuzzo influenced a controversial debate within society over gender spheres. The time period studied in this presentation includes the civil rights marches, expansion of voting rights, gains in African-American political power, and gender norms. Data has been collected through newspapers, academic magazines, and books. This research is still being actively pursued. Liuzzo left her husband and five children in Detroit to assist the Southern Christian Leadership Conference in transporting marchers to Montgomery, Alabama. With her last transportation of the night, Liuzzo lost her life. The northern and southern states responded to her death differently. Many newspapers in the north mourned her as a martyr to the civil rights movement while most in the South condemned her as a busybody who should have been home with her husband and children. Liuzzo's life defied female norms while her death highlighted the nation's hypocrisy when it came to gender expectations. Liuzzo is a largely forgotten civil rights heroine, one eclipsed by more iconic names from that era. This presentation challenges the prevalent belief that Liuzzo's death did not impact the nation's view of women. Further research should be conducted in universities with collections of primary sources to determine the aftereffects of Liuzzo's murder.

The Untold Story of Thalia Massie and the Territory of Hawaii v. Ben Ahakuelo et al. Trial
Andrew W. Wolf

Faculty Mentor(s): Dr. Whitney Snow

Prothro-Yeager College of Humanities and Social Sciences, Department of History

On September 13, 1931, a visibly beaten American socialite, Thalia Fortescue Massie, went to the Hawaiian police claiming that a gang of men had sexually assaulted her shortly after she left a military social earlier that evening. This case made international headlines, leaving shock and horror in its wake, but when a group of young Hawaiian men were accused, island inhabitants felt they had been scapegoated and were innocent of the charge. Thalia's mother, husband, and family friend attempted to force a confession by kidnapping one of the men. This young man was shot in captivity, supposedly by Thalia's mother Grace. A murder trial ensued. The renowned retired lawyer Clarence Darrow served as the defense attorney, giving further sensationalism to the trial. Many newspapers hailed Grace as a hero for avenging the rape of her daughter. Others labeled her entitled and wrong for having taken the law into her own hands. Ultimately, Grace and her cohorts were found guilty of murder but Darrow's acumen got them a commuted sentence of one hour. One hour for killing a man. Despite being similar to the Scottsboro Boys trial in Alabama, the Thalia Massie case is less clear cut. Whereas historians do not believe the girls of the Scottsboro Boys trial were raped, they are less confident when it comes to Thalia. This paper argues that while the young Hawaiian men may have been innocent, Thalia did sustain some form of assault.

Battle of the Little Bighorn
Dana Eipper

Faculty Mentor(s): Dr. Whitney Snow

Prothro-Yeager College of Humanities and Social Sciences, Department of History

On June 25, 1876, the Sioux and Cheyenne won the Battle of the Little Bighorn, leaving George Armstrong Custer and all of his 7th cavalrymen dead. While much ado has been made over Custer's controversial legacy, this paper will instead focus on the impact this battle had on the Native Americans who so valiantly attempted to ward off this attack and thus, resist being forced onto reservations. The Battle of the Little Bighorn was a significant victory for the Plains Indians and an utter embarrassment for the U.S. military. However, as 'Old Lodge Skins' said in the film Little Big Man, 'We won the battle...we won't win the war.' Indeed, two of the battle's Native-American leaders, Sioux warriors Crazy Horse and Sitting Bull, continued the struggle against the U.S. but to no avail. Crazy Horse was later killed at Fort Robinson while
Sitting Bull spent much of his time touring with Buffalo Bill's Wild West Show. The Battle of the Little Bighorn is estimated to have lasted no more than an hour, but its ramifications spanned generations and while often called Custer's Last Stand, it might better be titled The Last Stand of the Sioux and Cheyenne.

Fears vs. Facts: The HUAC Era  
Gabby Wright  
Faculty Mentor(s): Dr. Whitney Snow  
Prothro-Yeager College of Humanities and Social Sciences, Department of History

As Cold War tensions intensified and the Red Scare permeated American life, the House Un-American Activities Committee (HUAC) attained an unprecedented amount of power. Intended to investigate alleged communist activity, HUAC was established in 1938 with Texas politician Martin Dies as chairman and sponsor. By the 1950s, more and more celebrities fell victim to the HUAC trials as Senator Joseph McCarthy rose to prominence on the committee. Some like actress Lucille Ball escaped relatively unscathed but others like screenwriter Dalton Trumbo were blacklisted. No one was spared from accusations, least of all politicians. The most notable case was that of Alger Hiss, a former U.S. State Department official convicted of perjury in 1950. The HUAC era was a dark but important time in history. It has often been compared to the Salem Witchcraft Trials and the communist accusations were often referred to as ‘witch hunts.’ The HUAC trials were fueled by the fear that communists had infiltrated every aspect of American life and as such, must be rooted out. The results destroyed both livelihoods and lives as Americans allowed fears to override facts.

Mistreatment of Japanese Americans During World War II  
Jordan Wilson  
Faculty Mentor(s): Dr. Whitney Snow  
Prothro-Yeager College of Humanities and Social Sciences, Department of History

During World War II, children were left without parents, boys were drafted, and worst of all, the U.S. government turned on some of its own citizens. As tensions grew and the threat of bombings and spies mounted, the government took drastic measures by intentionally alienating one particular group – Japanese Americans. Though some Japanese Americans had only recently immigrated to the U.S., most were native-born citizens. This mattered little to politicians who suspected Japanese Americans maintained loyalty to Japan and thus, could not be trusted. This belief led to one of the darkest moments in American history, a period of time where anyone with Japanese heritage was forced to leave their home and move to a camp. Told they would only be held in the camps for a few weeks, Japanese Americans soon realized their stay would be indefinite. Weeks turned to months and then these men, women, and children were moved into permanent camps called internment camps. This is a tragic moment in American history where the U.S. government targeted citizens due to their heritage. It is also the moment where many Americans realized that while the U.S. boasted the title ‘free country,’ the claim was largely illusory.

Truman Capote: Cultural Icon  
Karrington Bradley  
Faculty Mentor(s): Dr. Whitney Snow  
Prothro-Yeager College of Humanities and Social Sciences, Department of History

Truman Capote, born Truman Persons, was a very unconventional man and brilliant author. He began writing at the age of eight and devoted more time to this craft as he grew into a teenager. Truman's mother and father divorced when he was only four years old and, in the aftermath, he was sent to Monroeville, Alabama, to be raised by his mother's family while she traveled. In 1933, Capote's mother brought him to Manhattan, New York, to live with her and her new husband Joe Capote. Joe later adopted Truman so that is how he came to have the Capote surname. Truman's tumultuous childhood left scars. His biological father was a schemer, could not hold down a job, and drifted constantly. His mother, only 17 at Truman's birth, became an alcoholic. As a result, Truman became estranged from both of his parents. Despite his
difficult upbringing, Truman achieved great success in the world of publishing and this, coupled with his unique fashion style and provocative photographs, became a pop-culture icon for gay boys and men.
2019 Celebration of Scholarship
Undergraduate Student Poster Presentations
Thursday April 25, 9:00 AM – 5:00 PM
Clark Student Center Atrium

Poster Session I 9:00 – 11:00 AM

Poster 1: CTE Detection in Athletes using PET
Logann Ewers, Ryanne Macklin, Caitlyn Munsch, Kaelen Powless
Faculty Mentor(s): Dr. Jessyca Wagner
Gunn College of Health Sciences & Human Services, Department of Radiologic Sciences
Athletes engaging in contact sports are at an increased risk of sustaining sports-related traumatic brain injuries (TBIs). Repetitive TBIs can lead to negative long-term effects, one being Chronic Traumatic Encephalopathy (CTE). This disease can cause mood and behavioral changes, memory and speech dysfunction, and in severe cases suicidal tendencies. Until recently, CTE could only be diagnosed during autopsy. New research suggests positron emission tomography (PET) has the potential to detect CTE in living athletes. This poster will examine the use of PET in the detection of CTE so athletes can make an informed decision to continue their careers or not. The research found that PET detected abnormal protein deposits in the brain consistent with what was seen during autopsy. Further research is needed to definitively confirm the findings such as larger sample sizes and autopsies on the original participants.

Poster 2: The Future of Radiology and 3D Printing
Demerus Darville, Edeesha Darwton, Dionne Letang
Faculty Mentor(s): Dr. Jessyca Wagner
Gunn College of Health Sciences & Human Services, Department of Radiologic Sciences
The use of 3D imaging is becoming increasingly popular as technology continues to advance for better patient care. Using methods that are safe and easy to show any form of abnormalities at early stages needs much attention. 3D printing gives a great representation of how certain medical procedures can be seen in detail even in the early stages. Research on the effectiveness, guidelines, training, process of printing, and creation of 3D models was conducted. A literature review was conducted, and it was found that 3D printing uses stereolithographic technology to fabricate models of different anatomic parts. Understanding how a radiographic image could end up looking 3D was questionable; however, learning the step by step process of creating the image gave a better understanding of how the images are processed and how they could be further manipulated with the use of different software. 3D printing continues to serve a great purpose and transforms the medical field. The ability for physicians to interact with tissues and bones and even cut into a virtual TV will continue to revolutionize medical technology for the future.

Poster 3: Exploring the Best Modalities for Imaging Lung Pathologies: Pulmonary Emphysema and Edema
Aliyah Rolle, Kenzie McKinley, Zmesco Poitier, Laurencia Walters, Tiesha Wilson
Faculty Mentor(s): Dr. Jessyca Wagner
Gunn College of Health Sciences & Human Services, Department of Radiologic Sciences
A literature review was conducted to meticulously examine the optimal modality and technique for imaging additive and destructive lung pathologies. This analysis highlights pulmonary edema and emphysema to examine both additive and destructive lung pathology. Additionally, it aims to contrast and compare the gold-standards and techniques used in imaging these pathologies. Upon initial review of the literature, it was determined that it is imperative when imaging the lungs to utilize the most vital techniques while still obtaining a quality image. Being knowledgeable of the nature of the pathology is not only required but often crucial in the diagnostic process. Because of that, it was found that when imaging a destructive pathology, such as emphysema, technique must be decreased, and when imaging additive pathology, such as pulmonary edema, technique must be increased.
Poster 4: Imaging the Mind: Neuroimaging in Psychiatric Disorders
Jaley Willingham, Melissa Bernal, Joshlyn Causey, Kristin Fender, Zoe Smith
Faculty Mentor(s): Dr. Jessyca Wagner
Gunn College of Health Sciences & Human Services, Department of Radiologic Sciences
Until recent years mental disorders were described as nothing but a chemical imbalance. Neuroimaging allows us to identify the physical abnormalities found in the brains of patients with mental illnesses. This additional information allows for collaboration between radiologists and psychiatrists to provide a heightened level of patient care. PET, SPECT and fMRI are all modalities that help create a physiological map of the human brain. This poster describes each of these modalities in order to further identify a variety of mental illnesses. A literature review was conducted and revealed that the best modality for neuroimaging is Functional Magnetic Resonance Imaging (fMRI). While PET and SPECT are also viable options, fMRI requires the least amount of radiation and offers many benefits over PET and SPECT. The mental illnesses able to be visualized include depression, Tourette syndrome, OCD, ADHD, Alzheimer's disease, and dementia, among others.

Poster 5: Healthcare and Transgender Patients
Samantha Burrows, Lexi Hardin, Emily Quintero, Kaylan Urbanczyk
Faculty Mentor(s): Dr. Jessyca Wagner
Gunn College of Health Sciences & Human Services, Department of Radiologic Sciences
The transgender population is rapidly growing around the world. Healthcare professionals need to be aware of how to treat these individuals, as well as use effective communication skills. A review of the literature supported the significance of these skills and suggested the implementation of additional education and training for healthcare providers. Trust and respect is critical when communicating with these patients, as they may not affiliate with their name or gender identity. Asking relevant questions to be knowledgeable about the patient and who they are will provide a sense of respect. Having training sessions to become familiar with this group of people can allow healthcare workers to be prepared for these situations. The knowledge of treating and understanding transgender patients will allow proper and successful care during their visit. Having healthcare workers better understand these types of patients can contribute to a better overall experience.

Poster 6: The College Student Struggle
Ashly Acevedo, Michelle Rieves
Faculty Mentor(s): Dr. Randy Case; Dr. Jennifer Anderson
Gunn College of Health Sciences & Human Services, Department of Respiratory Care
The balance of a college student's success and financial needs have become a huge stress factor in today's society. When a college student experiences this, they tend to struggle with meeting their achievements as a student as well as an individual, who wants to succeed. This all occurs while attempting to find time for required homework and studying. This study seeks to identify the potential causes of stress for college students and the students' ability to cope and manage the struggles associated with the balance of school and extracurricular activities. Within this study, a survey was conducted to determine how students in extracurricular activities deal with stress and how they balance the essentials of life. Preliminary results found that students do feel an increased level of stress when adding extracurricular activities and occupational requirements to their college studies. In addition, students determined that proper time management was an essential component to decreasing stress levels. Elevated stress levels are commonly seen in college students, especially those with outside activities and responsibilities. Finding methods to balance these activities is essential to decreasing the struggles associated with being a college student.

Poster 7: Benefits of Interdisciplinary Codes with Health Care Students
Madison Dodd, Sara Burrows, Gabrielle Woelffer, Taylor Herron
Faculty Mentor(s): Dr. Randy Case; Mrs. Jessica Fino
Gunn College of Health Sciences & Human Services, Department of Respiratory Care
In order to prepare students for the health care setting, universities are establishing programs to practice clinical simulations to give students an idea of a code situation. Providing these types of simulations can potentially give students the confidence of providing quality care during a code. It can also give the student
an idea of the team work that is required to perform a code successfully. Unfortunately, not all codes have surviving victims, which can be somewhat troubling to a new health care student. However, performing these simulations allow students the ability to cope with these stressful situations no matter the outcome. This research was developed to determine the perceptions healthcare students have on the implementation of simulation exercises into the curriculum. The research was studied to determine if students found these types of exercise valuable and beneficial to the learning process. Within this research, health care students were surveyed to determine the outcome of a mock simulation and how well their communication skills improved and the benefits of working as a team. Within the research, it was found that a significant percentage of students found value in implementing simulation exercises into the curriculum. According to previous research and the study within this project, it was determined that implementing simulation exercises into the curriculum for healthcare students is beneficial and valuable to their current and future work as a healthcare professional.

**Poster 8: VAP: The Most Effective Preventative Methods Based on Respiratory Therapists’ Opinions**

Shelbe Mabra, Christina Nguyen, Tierra Shears, Julienne Clare Sistoso  
*Faculty Mentor(s): Dr. Randy Case; Dr. Erica Judie*  
Gunn College of Health Sciences & Human Services, Department of Respiratory Care  
Ventilator-associated pneumonia (VAP) is one of the most common nosocomial infections and leading cause of morbidity that's often associated with the high cost of care seen in Intensive Care Units. Prolonging the usage of invasive mechanical ventilation increases the likelihood of obtaining VAP. In critically ill patients with underlying diseases, VAP is also more likely to occur due to their increasing need for ventilator assistance. Because of the increased incidence of VAP in patients with extensive requirement of care, the need for VAP protocols have been put in place in most or all Intensive Care Units. This research study was conducted to provide understanding, discovery, and evaluation of VAP and its preventative strategies according to the perceptions of respiratory therapists. Proven research has shown that the use of proper preventative methods will aid in the prevention of hospital acquired pneumonia. Although protocols are in place to help prevent infection, there are still patients that are more susceptible due to their overall condition. Within this study, respiratory therapists were surveyed to determine their opinions on the most effective method of VAP prevention. Although varied in responses, respiratory therapists indicated that early discontinuation of mechanical ventilation or early extubation is the most effective preventative method of VAP. More research is needed to determine the absolute best form of VAP prevention. Existing research is varied on the best method and contrasts the views of experienced respiratory therapists.

**Poster 9: Nicotine Content in E-Cigarettes Versus Traditional Cigarettes**

Maddison Riggins, Misty McLaughlin, Maggie Sanchez, Brittany Thompson  
*Faculty Mentor(s): Dr. Randy Case; Mrs. Jessica Fino*  
Gunn College of Health Sciences & Human Services, Department of Respiratory Care  
The use of electronic cigarettes among college aged adults has been on the rise since 2003, when the first commercially successful electronic cigarette was created in Beijing, China. Electronic cigarettes were created with the intention to be a healthy alternative to smoking the traditional tobacco cigarettes. However, due to electronic cigarettes not being regulated by the FDA, recent studies have shown this may not be correct. Studies suggest that the electronic cigarette companies actually target the college aged population. Furthermore, it is suggested that the college aged population may not be aware of the nicotine content within the electronic cigarettes. This research study was developed to bring awareness to college students about the potential dangers associated with electronic cigarettes in comparison to traditional cigarettes, such as the nicotine levels within each. Within this research, a survey was conducted among college students to determine if they were aware of the nicotine content in electronic cigarettes in comparison to traditional cigarettes. Although not all participants within the research study were aware of the actual nicotine content within e-cigarettes, several actually did know the amount of nicotine for both e-cigarettes and traditional cigarettes. Although several of the participants within the survey were aware of the potential dangers of e-cigarettes, including their average nicotine content, it was determined that a larger
percentage of college students are unfamiliar with nicotine content. Therefore, enhanced education about the potential dangers of e-cigarettes needs to be developed.

**Poster 10: Marijuana Effects on the Lungs**  
Sierra Norwood, Sara Nelson, Emmy Geibe, Shelbie Wright  
*Faculty Mentor(s): Dr. Randy Case; Mrs. Mary Sue Owen*  
Gunn College of Health Sciences & Human Services, Department of Respiratory Care  
Marijuana has been seen as a harmful drug for almost a century. In recent years, states have begun to legalize marijuana for medicinal and recreational use. Already, more than thirty states in the US have legalized marijuana for their positive medicinal use. This has caused an increase in controversy over the effects of marijuana on the body, more specifically the respiratory system. It is unclear whether there is a direct line between marijuana use and lung disease. Most research is focused on marijuana coupled with tobacco smoke. The purpose of this research is to isolate the effects of marijuana alone on the lungs, based on past research. In addition, this research is seeking the perceptions of lung damage associated with marijuana from working respiratory therapists. Within the study, we questioned respiratory therapists on their view of the effects of marijuana on the lungs. By understanding the reviews and results of studies done in the past five years, it may be possible to prove or disprove a negative effect on lung function. Preliminary results of the research are mixed. The respiratory Therapists surveyed had a variety of opinions based on the effects of marijuana associated with lung function. Some believe the effects of marijuana are similar to those of traditional cigarettes. More research is needed to determine the true effects of marijuana on the lungs. Although some believe they understand the negative effects of marijuana, adequate research about this form of smoking have not been conducted.

**Poster 11: Hello, Is it STRESS you're looking for?**  
Shellianne Jules, Ka-Terra Brown  
*Faculty Mentor(s): Dr. Randy Case; Dr. Jennifer Anderson*  
Gunn College of Health Sciences & Human Services, Department of Respiratory Care  
At some point in life, we have all felt stress. It is a natural part of life. Sometimes, it acts as a positive force and other times, it can be negative. Everyone tends to denote 'stress' as negative. Even Google defines stress as mental or emotional strain due to adverse circumstances. However, research also proves that there is a positive side to stress, for example manageable stress increases alertness and performance. This research study was conducted to break down and expand on the definitions of stress, the potential triggers of stress for college students, and how college students cope with stress. Within this study, surveys were performed to discover feedback from college students as to the potential causes of their stress, what increases their stress levels, and to what extent does stress impact their body. Preliminary results from the research have been mixed. Some view stress as a negative force within their lives. Those individuals did not find positive value in stress. Some students found both positive and negative results of stress. Within the research, it was evident that all students surveyed deal with stress on a regular basis. Although the majority of students found negative forces associated with stress, there were some students who did find positive aspects to certain levels of manageable stress.

**Poster 12: Lung Transplants: Are They Worth It?**  
Jacob Spicer, Caleb Castilho, Jordan O'Neal  
*Faculty Mentor(s): Dr. Randy Case; Dr. Tammy Kurszewski*  
Gunn College of Health Sciences & Human Services, Department of Respiratory Care  
Thousands of adults in the US today with pulmonary diseases are considered for lung transplantation. Out of those thousands, only a select few are actually qualified for such a procedure. Accompanying this process is a large team of healthcare professionals and family that are ultimately attempting to increase the quality of life in the patient undergoing the surgery. However, minimal research has shown that there could be signs of better quality of life without such a daring procedure. This research study is to help understand the disease processes associated with lung transplants and the associated risks with lung transplantation versus the patient's prognosis without. This may shed light whether or not candidates should undergo the transplant. Within this research, a survey of Respiratory Therapists and Physicians was conducted to see their opinions on prognosis of quality of life with patients receiving or not receiving lung transplantation.
Preliminary results demonstrate minimal comparative knowledge of those receiving lung transplants versus those not receiving the transplant. However, a large percentage of those surveyed believed the procedure was usually in the best interest and quality of life for those receiving the transplanted lungs. Although minimal research has been conducted on the comparison of quality of life for those receiving lung transplants versus those not receiving transplants, the majority of those surveyed found value in the transplant for the receiving patients.

**Poster 13: The Psychological Impact of Death and Dying on Health Care Students**  
*Wenica Brodie, Pollyann Bethel*  
*Faculty Mentor(s): Dr. Randy Case; Dr. Erica Judie*  
*Gunn College of Health Sciences & Human Services, Department of Respiratory Care*

Death and dying are common events seen within Critical Care Units. Although commonly seen, some healthcare professionals still find it difficult to cope. Similarly, healthcare students share in these experiences during their first critical care rotation. These events are often more emotionally disturbing for students than experienced healthcare professionals. Students are greatly affected because they are not taught coping mechanisms prior to their clinical rotation. This research explores information pertaining to healthcare students' ability to cope with death and dying of patients during hospital-based clinical rotations.  
Four published articles that report on results from research conducted on healthcare professionals' and students' ability to cope with death and dying patients were reviewed. In addition, research was obtained through surveys distributed to healthcare students at Midwestern State University. The surveys provide information about students' experiences and preparedness regarding the death and dying process. Preliminary results demonstrate a lack of training and preparedness for the death and dying process within students' clinical rotations. Healthcare students are typically exposed to numerous situations within their clinical rotations dealing with death and dying. Research has demonstrated a deficiency in the training and coping strategies delivered to healthcare students related to the death and dying process.

**Poster 14: Creating Student Investment Through Engagement**  
*Amerhyst Aquirre, Angela Dobbs, Luz Garcia, Pricilla Patino*  
*Faculty Mentor(s): Dr. Lauren Jensen, Stephanie Baker, Lauren Armstrong, Michelle Hall*  
*Gunn College of Health Sciences & Human Services, Wilson School of Nursing*

The purpose of this research project is to evaluate the effects of social and academic engagement on the retention of declared nursing major students at the end of their freshmen semester. Students from Health Sciences who have declared either pre-nursing as their major or those who remain undeclared will be recruited to join the research study. Thirty applicants from those responding will be randomly chosen to participate in the study. A mixed method will be used to identify reasons students leave the nursing program during their first year of college. A pre and post survey and focus groups will be used. Intervention with high impact programs (Kuh, 2008), exposure to campus social and academic resources and small group engagement will improve retention. Research has shown this form of engagement to boost retention (Latino, 2017).

**Poster 15: Exploration of the Nurse's Perceptions of Interprofessional Communication in Emergency Trauma Care**  
*Kaelen Vazquez*  
*Faculty Mentor(s): Dr. Robin Lockhart*  
*Gunn College of Health Sciences & Human Services, Wilson School of Nursing*

There is a gap in the communication between nurses and physicians in the emergency trauma setting. Various barriers in communication lead to poor patient care and frustration in the workplace. Approximately, 70% to 80% of healthcare errors are due to poor team communication (Courtenay, Nancarrow, & Dawson, 2013). Nursing staff and physicians have traditionally learned how to operate separately. Now; however, they must learn how to communicate and work together in order to improve patient outcomes and care in trauma settings (Peters, 2017). In the trauma setting, it is crucial that nurses and physicians work alongside one another in order to prevent errors in patient care from occurring. Effective communication improves safety, which ultimately improves patient outcomes. The purpose of this study is to explore the perceptions of nurses working in trauma care regarding their role in
interprofessional communication. The aims of the study are to interview nurses working in trauma care to ascertain their perceptions of their role in interprofessional communication, the role development that has occurred, barriers to implementing the role, and ways to improve the communication. The study is being conducted using the descriptive-exploratory methodology of interviewing the participants and analyzing the results using thematic analyses. The results will be shared with the nurses and within a paper that will be presented at a professional conference and submitted for publication.

Poster Session II 12:00 – 2:00 PM

**Poster 16: Characterization of *E. coli* Population Diversity in Locally Resident Canada Geese and Migratory Seagulls**  
Tarrah Miller, Shanice Toussaint  
*Faculty Mentor(s): Dr. James Masuoka*  
McCoy College of Science, Mathematics and Engineering, Department of Biology  
The emergence and dissemination of antibiotic resistant pathogens continues to plague healthcare by increasing healthcare costs and mortality rates. Migratory birds are able to transfer antibiotic resistant strains to local organisms. We hypothesized that the seasonal seagulls that arrive each winter serve as a source of new strains of bacteria and that are then introduced into the local environment and then picked up by our resident waterfowl. The aim of this project is to compare *Escherichia coli* strains isolated from both resident Canada geese and migratory seagulls. Fecal samples were collected from two separate Canada goose individuals. Ten presumptive *E. coli* colonies (5 from each individual) were selected for further testing. Of the ten, nine were identified as *E. coli* and one was *Enterobacter cloacae*. Of the *E. coli* isolates, variation in sugar utilization and patterns of antibiotic resistance suggested the presence of different strains. Current efforts are focused on carrying out the same methodology on specimens obtained from seagulls that migrate into the area each winter. By comparing the metabolic and antibiotic resistance patterns, we hope to determine common strains to both species as well as those that are unique to one or the other. By extending these comparisons over time, we will better understand how antibiotic resistant bacteria move between populations.

**Poster 17: The Effect of the Human Hormone Serotonin and Derivatives on the Growth of the Fungal Pathogen *Candida albicans***  
Abigail DeLizio  
*Faculty Mentor(s): Dr. James Masuoka*  
McCoy College of Science, Mathematics and Engineering, Department of Biology  
*Candida albicans* is a potentially pathogenic yeast present in the human gastrointestinal and reproductive tracts. While normally commensal, this fungus can cause disease ranging from mild to life threatening. There are effective drugs used to treat candidiasis, but they are often not well tolerated by patients. Thus, there is a lot of interest in finding new drugs or therapeutic strategies. Previous work showed that selective serotonin-reuptake inhibitors (SSRIs) used to treat women experiencing severe premenstrual syndrome (PMS) also cleared their candidiasis. Subsequent work suggested that it was not the SSRIs themselves that were antifungal, but the serotonin. Indole also influences *C. albicans* activity. Both serotonin and indole are products of tryptophan metabolism, and so have similar structures. We hypothesized that the observed effects are due to these similarities. Fungal strains were grown in the presence of serially diluted serotonin, indole or tryptophan. The minimum inhibitory concentration (MIC) is the lowest concentration of drug that prevents visible growth. Both serotonin and indole produced an MIC within the range of concentrations tested. Although serotonin is normally thought of as a hormone affecting the brain, the majority of serotonin is produced in the intestines. Thus, serotonin, indole and tryptophan would all be present in the digestive tract. Understanding serotonin's role in the gastrointestinal tract and function as an antifungal compound could lead to a better understanding of the commensal *C. albicans* microbe-host interaction with the human body, as well as provide insight for the development of new preventative strategies and drugs against candidiasis.
Poster 18: Directed Evolution of Membrane Protein Chaperone to Ameliorate Protein Aggregation-Associated Diseases
Prisca Mbonu
Faculty Mentor(s): Dr. Fu Cheng Liang
McCoy College of Science, Mathematics and Engineering, Department of Biology
Protein homeostasis is essential for all cells and requires the proper control of the folding, localization and interactions of all proteins. However, protein aggregation poses a challenge to protein homeostasis and leads to several diseases. Alzheimer’s disease is an increasingly prevalent neurodegenerative disorder around the world, involving protein aggregation and causing neuronal cell death. However, little is known about how to utilize effective molecular chaperones to prevent protein aggregation-prone disease. With the advantage of a toxin-antitoxin folding biosensor, we can directly evolve a membrane protein chaperone that can assist with folding and preventing degradation of antitoxin, thereby neutralizes toxin activity. Such mutational selection provides a powerful tool for us to further understand how these membrane protein chaperones utilize spatial and temporal regulation to prevent protein aggregation. More specifically, we will focus studies on mutational selection of protein targeting machinery, cpSRP43, and our goal is trying to apply their unique anti-folding or disaggregation function into medicine that can improve the treatment of the aggregation prone disease.

Poster 19: Enhancing Lake Water Quality Through the Use of Floating Wetland Islands
Sarah Kennedy
Faculty Mentor(s): Dr. Michael Shipley
McCoy College of Science, Mathematics and Engineering, Department of Biology
As our world population grows exponentially and urban development continues, water is quickly becoming a limited resource. Moreover, the quality of that water is diminishing as well. Water quality is based on several factors such as nutrient composition, dissolved oxygen levels, pH levels, turbidity, and many others. There are several ways to improve water quality, but some methods are vastly expensive and can be impractical depending on the circumstances. This study analyzes an alternative method for improving water quality without the use of expensive treatments: the use of floating wetland islands. This research investigates how small islands inhabited by native plant species can naturally improve the quality of a polluted body of water through the absorption of excess nutrients and the addition of dissolved oxygen. Weekly measurements of phosphates, nitrates, dissolved oxygen, pH, conductivity, and temperature are taken to monitor changes over time due to the presence of aquatic plants. This experiment is conducted within a lab setting to eliminate any uncontrollable aspects of nature (i.e. rain, floods, waterfowl, etc.) and to increase the accuracy of the results. Preliminary results show that the plants are gradually lowering conductivity levels and restoring a neutral pH. A definitive decrease in nitrates and phosphates over time is an expected result. With such expected results, it could be concluded that floating wetland islands are a viable option to enhance water quality of ponds, lakes, and storm drainage systems naturally as opposed to expensive water treatments.

Poster 20: Gene Editing with CRISPR
Natalie Ragland, Anahi Palacios
Faculty Mentor(s): Dr. Jon Scales
McCoy College of Science, Mathematics and Engineering, Department of Biology
This project will produce reagents that will allow the CRISPR-Cas9 genome editing technology to be integrated into the biology curriculum. Two plasmid vectors will be made that contain the Cas9 endonuclease enzyme along with sgRNA sequences to target the ADE2 and CAN1 genes of Saccharomyces cerevisiae (baker’s yeast). Yeast is commonly used to demonstrate principles of classical genetics. The CRISPR reagents we generate will be available for use in several biology courses including Genetics, Molecular Biology, Developmental Biology, Cell Biology, and Advanced Genetics. Disrupting the ADE2 gene in yeast causes the cells to grow with a red coloration. Disrupting the CAN1 gene allows the yeast grow in the presence of an otherwise toxic chemical called canavanine.
Poster 21: Energy from Saltwater Mud
Kelton Vidal
Faculty Mentor(s): Dr. Mahmoud Elsharafi
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

There is a growing need for energy throughout the world and this increase in demand for energy has now also put a strain on the current sources of energy. In the process of oil/gas production, there are large amounts of water released into the atmosphere as well as into the ground or soil. This water contains chemicals such as Sulphur and Nitrogen oxides, Bitumen, Calcium, Base oil, and Sodium. It is commonly referred to as ‘wastewater’ and is disposed of. The goal of this project is to investigate the conductivity of electrical energy by this wastewater. This is can be done by using various types of soils and water. Various mixtures were created using soils mixed with different percentages of clay and water with varying salinity. A small source of electricity was then applied to the saltwater mud to provide a voltage to the experiment. The chemicals in the mud are then expected to amplify the input voltage and create enough energy to power electrical devices. To prove this, a voltmeter will be connected to the mud via an electrode. It was found that clay soil produced more energy than sandy soil. Also, an increase in water volume would dilute the mixture and this would slow down the transfer of energy in the mud. The results of this work can be useful for the environment and the decreasing energy sources.

Luuk Teurlinx
Faculty Mentor(s): Dr. Zeki Ilhan
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

The aim of this work is to control the actuators of a two degree-of-freedom gravity compensation mechanism that could be used to assist people with lower-limb injuries during rehabilitation phases. The gravity compensation mechanism combines a basic four bar linkage with an additional link and two springs attached to suspend an adjustable portion of a patient's body weight. In this work, the nonlinear dynamic model of the proposed mechanism is incorporated into control design based on a Model Reference Adaptive Scheme (MRAS) that is robust against link inertias and different body weights suspended. The adaptive controller design is executed in two loops: An ordinary feedback loop composed of the process model and a controller with adjustable gains, and an outer loop for adjustment of the controller gains based on a to-be-designed adjustment mechanism. The dynamic model is at the heart of the adjustment mechanism, as it is used to quantify the deviations from the ideal operating conditions. The performance of the proposed adaptive control algorithm is then tested in numerical simulations in MATLAB, and the effectiveness of the design is discussed based on these initial simulation results.

Poster 23: Salt Ions Removal from a Brine Solution
Phelecia Scotland, Jonathan Granger
Faculty Mentor(s): Dr Salim Azzouz
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

The aim of this project is to create a mechanical system that effectively separates Na⁺ and Cl⁻ ions from brackish water. A chemical study on how these ions behave in solution has been conducted. It is important to understand how to effectively separate them. This project is divided into five subsections: 1) the design phase, 2) ordering the necessary materials, 3) 3D printing the parts, 4) establishing the electrical connections, and 5) testing the separator. The ongoing first phase uses the SolidWorks drawing software to design the separator based on the team’s many brainstorming ideas. Secondly, the team determined that a sodium reference electrode to measure the concentration of sodium during the testing phase was needed. A methodology is being created on how to calibrate the ppm meter to measure the concentration of different salt solutions. One of the challenges encountered during the design phase was determining the electrical connections between the steady DC power supply and the turning charged turbines. The ideas of using a commutator with brushes was proposed to deliver the electricity through a system of a turning wire to the positive and negative charged turbine paddles. Additionally, it is estimated that the design phase will be completed and printing of the different parts will begin in the few weeks. The testing phase is expected to
Poster 24: Implementation of Nonlinear Oscillatory Circuits using FPAA
Abigail Reyes, Tyler Joy-Anne Cadette

Faculty Mentor(s): Dr. Yu Guo
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

This research project aims to investigate chaotic behavior experimentally through the use of circuit design. Chaotic generators generally comprise of various electronic components such as individual op-amps, analog multipliers and integrators. This process of building chaotic generators is generally hard and time-consuming. Due to these complexities encountered when hard wiring such a complex circuit, we used a Field-Programmable analog array (FPAA). FPAA is an integrated circuit device that offers field programmability. In recent years FPAA has gained traction in the electrical engineering research community due to its flexibility and simplicity. FPAA can be configured in real time which allows the designers to make adjustments and modify the design in a fast and reliable manner. From our chaotic generator, computational methods will be used to analytically predict the complex periodic motions. Complete stable and unstable solutions of periodic motions will be obtained for better understanding of the nonlinear behavior. Bifurcations, chaos, symmetric and asymmetric phenomenon will also be investigated. Conclusively analytical solutions for nonlinear dynamical systems will be investigated through discretization.

Poster 25: Dynamic Filtration Test Experiments Design
Jenom Pyeng, Jedesh Chandrasegaran, Gayal Hewakuruppu, Tapiwa Gasseler

Faculty Mentor(s): Dr. Mahmoud Elsharafi
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

The purpose of this project is to conduct a Dynamic Filtration Test to Investigate the Effect of Preformed Particle Gels (PPGs) on Un-swept, Low-Permeable Zones/ Areas. A filtration test is a simple means of evaluating formation damage. This work uses a schematically dynamic filtration test experiment design apparatus to carry out the various filtration test experiments. It uses different core samples, various brine concentration, and various gel types. The permeability of each sandstone core samples is calculated before and after the filtration test. Experiments are still being observed. The objective of this study is to find methods that minimize the damage caused by PPGs on un-swept, low-permeable zones/areas, thus improving PPG treatment efficiency. This approach will identify the best properties of the PPGs, which can neither penetrate conventional solid rocks nor form cakes on the rocks' surface.

Poster 26: Data Collection and Analysis from a Wind Turbine and a Photovoltaic Solar Panel
Cykelle Semper, Ernuel Tonge

Faculty Mentor(s): Dr. Salim Azzouz
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

The main goal of this study is to monitor the impact of many climatic parameters on the power generation of an MSU installed wind turbine and photovoltaic solar panels. In this Spring 2019 semester, two experimental electrical circuits, one for the two photovoltaic solar panels and one for the wind turbine are being set-up to collect the produced electrical energy and either store it in a battery pack or use it in an electrical load. The team is focused on determining the functionalities of the two charge controllers associated with the solar panels and the wind turbine. After many observations, it has been determined that the charge controller, controls the flow of electrical current to the battery pack and the electrical load. The charge controller stops the flow when the battery is almost fully charged, and initiates a charge when the battery capacity is close to a low limit. In addition, it has been determined that the charge controller prevents the inverse current from the battery to reach the solar panel and the wind turbine for safety purposes. This operation is internally done through a power diode. Furthermore, the team succeeded in counting the electrical energy produced by the solar panel by connecting one of the kilowatt-hour meters to the circuit. The voltage divider delivering the needed 12 Volts from the solar has been finally set up. The
team is currently focused on the wind turbine charge controller. It is expected that both circuits will be up and running by the end of the spring semester.

**Poster 27: A Pulley Based Movable Apparatus for the Biology Department**
Johnny Cognasi, Jason Perkins, Joseph Randall, Melani Ronoh
*Faculty Mentor(s): Dr. Jeong Tae Ok and Dr. Zeki Ilhan*
McCoy College of Science, Mathematics and Engineering, McCoy School of Engineering

The light-emitting diodes (LEDs) have been widely used as the artificial light source in many commercial greenhouses thanks to the various benefits such as light intensity, energy-use, control, longevity, heat control, color spectrums, power management, and long-term costs. We propose a pulley-based movable LED system that maintains the optimum light exposure to the growing plants. The apparatus was designed based on structural calculations, appropriate Photosynthetic Photon Flux Density (PPFD) readings from a Photosynthetically Available Radiation (PAR) meter, and gear ratio/motor efficiency experiments. Proper structure and light housing frames were designed based of Macaulay Singularity functions and deflection calculations, as well as the interpretation of multiple graphs made from the PPFD data. The PPFD dropped from 436 to 12 in 9 inches. In response to this, four 12 x 22 LEDs were placed 8 inches apart on a hollow aluminum frame to cover an 8 ft table with a desired emission profile. A 50 RPM, 6 N·m DC motor was selected to drive the system through a 5:1 gear ratio after the completion of efficiency experiments at varying loads. Arduino microcontroller was implemented to interface the ultrasonic distance sensors and the DC motor to enable both manual and automatic operating modes in a safe and user-friendly approach. Tests between vertical and horizontal sensor placement were conducted to characterize the optimum sensor placement. The accurate control of LED light intensity via the varied altitude will significantly reduce energy consumption and helps stimulate growth characteristics and improve plant quality.

**Poster Session III 2:00 – 4:00 PM**

**Poster 28: Differences between Musicians and Non-Musicians on a Test of Automatic Racial Biases**
Kayla Redder
*Faculty Mentor(s): Dr. Scott Frankowski*
Prothro-Yeager College of Humanities and Social Sciences, Department of Psychology

There are many benefits in the development of musical abilities. One benefit that has been explored in the psychological field is musical abilities relating to increased executive functioning. Executive function is a cognitive process that allows us to plan, control impulses, and make decisions quickly with little effort. The purpose of the subsequent research is to determine if better executive functioning associated with musical abilities leads to less biased responding on an implicit association test (IAT) of automatic racial prejudices. An IAT is similar to cognitive tasks that have previously been studied in relation to musical abilities in that both tasks require strong executive functioning to perform well, or in the case of the IAT to suppress automatic biases. Participants will be recruited from the upper level music program courses and introductory psychology courses. Participants will be asked to take an IAT and complete survey questions regarding their musical experience. In an IAT, participants make quick decisions in sorting positive and negative words and White and Black faces. When it takes longer to correctly sort Black faces with positive words compared to sorting White faces with positive words, there is evidence of an automatic racial bias. We expect that musicians will not show significant racial biases and non-musicians will respond with indications they do show a significant preference for White versus Black faces. No evidence of differences between the two variables will be evidence that cognitive benefits associated with musical abilities do not overcome learned social associations.
Poster 29: Longitudinally Evaluating Long Term Efficacy of a Sexual Assault Educational Training Program  
Ryan Lee  
Faculty Mentor(s): Dr. Scott Frankowski  
Prothro-Yeager College of Humanities and Social Sciences, Department of Psychology  
Sexual assault affects one in four college students. Universities recognize that sexual misconduct greatly impacts students and have been employing educational training programs for new students as a means of reducing these behaviors. There is, however, a lack of research on whether these programs are effective at changing attitudes in the long term, whether effectiveness varies among different student demographics, and whether certain personality traits among students moderate these programs' effectiveness. The goal of the proposed research is to evaluate the effectiveness of a sexual assault educational training programs to test whether such trainings lead to attitude change. We will use a longitudinal research design in which we will test whether participants' attitudes toward sexual misconduct change in response to an educational training intervention compared to a baseline. In addition we will collect participant trait variables (e.g. ambivalent sexism and need for cognition) and demographics to test whether these variables moderate the effects of the educational intervention. Anticipated findings: Data collection is beginning in mid-March 2019. Broadly, we hypothesize that we will see positive attitude change immediately after an intervention (i.e. a decrease in victimizing attitudes that can perpetuate sexual assault and harassment) but we expect that in the long term, attitudes will return to baseline. If results provide evidence of our predicted findings, it will indicate that new intervention methods should be used with college students in order to more effectively curb campus sexual assault.

Poster 30: Seasonal Affective Disorder on college campuses in Texas  
Adrienne Hill  
Faculty Mentor(s): Dr. Suheyl Gurbuz  
Prothro-Yeager College of Humanities and Social Sciences, Department of Sociology  
The issue that this research will be dealing with is if students going to college in Texas experience seasonal affective disorder (SAD), which is a mood disorder in which episodes of depression are triggered by seasonal changes such as temperature or light exposure. In the case of universities, it is important to know how frequently this occurs and what circumstances might cause/exacerbate it in order to help and offer support for these students. Previous research has shown that methods to improve this situation are interventions that are easily implemented such as more light exposure, but the consequences of not knowing and therefore not being able to help can lead to dire circumstances. I aim to discover if there are occurrences of depressive episodes experienced by students attending college in Texas during specific seasons. I will then look at what factors might correlate or cause this to happen. I seek to uncover if college students deal with SAD and if so what circumstances allow this to happen. I will look at where the students come from, the weather in particular cities, analyzed suicide rates, crisis calls, attempted suicides, and mental health admissions. Mixed methods will be used and analyzed. Data from Penn State's nationwide research on mental health will be looked at along with previous research of a similar nature done in other states.

Poster 31: Drug-Using Behaviors of Turkish Armed Forces Service Members: A Social Learning Perspective  
Maggie Wyatt  
Faculty Mentor(s): Dr. Suheyl Gurbuz  
Prothro-Yeager College of Humanities and Social Sciences, Department of Sociology  
The present study asked whether and how social learning factors affect drug use by members of the Turkish armed forces, a key institution in Turkey, where all male citizens complete mandatory military duty. To implement the study's 2-stage sampling design, first, we randomly selected a sample of troops serving in Turkey's 4 military branches, the army, navy, air force, and gendarmerie. This sample proportionally represented the military's makeup by the 4 branches. From it, we then chose randomly a subsample from each group, obtaining a final sample of 4,461 men. Each participating service member self-administered a questionnaire approved by the institutional review board of Gulhane Military Medical Academy's Psychology and War Psychiatry Department located in Istanbul. Data from this Mehmetcik 2015 Field
Study survey was subjected to negative binomial regression, and results showed participants' drug use to be positively associated, overall, with having drug-using friends. Drug-use behavior also differ by military units being served. An implication of the results is that drug prevention/intervention for service members could usefully target young men prior to conscription and persisting into their first months of military duty, aimed at enhancing their social learning process.

**Poster 32: Health Outcome for Mothers in Different Prison Systems**
Madelyn Brock  
*Faculty Mentor(s): Dr. Suheyl Gurbuz*
Prothro-Yeager College of Humanities and Social Sciences, Department of Sociology  
This study will examine a variety of prison systems and results will provide a basis for the effects of different prison policies on the wellbeing of fetuses entering the system. In this research study, nine industrialized countries will be analyzed along with the United States in regard to their prison systems, the mortality rate, and development of children born to incarcerated mothers. The nine countries selected will reflect rehabilitation centered prison systems to compare the results to the prison system in the United States. To begin the research, data regarding the infant mortality rate of incarcerated mothers will be gathered for each of the 10 countries. After data is collected, information will be gathered regarding laws and regulations on the incarceration of pregnant inmates for each of the 10 countries. The infant mortality rate will be compared against the infant mortality rate of its respective country and analyzed for uncommon trends in comparison to the general population. The overall health and development of each woman will be analyzed against both other women within and across the other 10 countries. The laws and regulations of each country will be analyzed further. Through analyzing various prison systems, there will be conclusive evidence of which prison policies are the most beneficial for expecting mothers who are incarcerated.

**Poster 33: Botched Executions**
Lindsye Olds  
*Faculty Mentor(s): Dr. Suheyl Gurbuz*
Prothro-Yeager College of Humanities and Social Sciences, Department of Sociology  
My research will be over a few topics, they include: how to make botched execution rates lower, how and if we could make it the prison doctor’s job to ensure the rate does go lower, and how to make it cost efficient. The most commonly used form is lethal injection, which is also the highest botched method out of the top 5 methods with a whopping 7.12% botched rate. It wasn't until 1977 that this method was introduced by Oklahoma who was the first state to adopt this method. It is no secret that the lethal injection has had its fair share of botched executions, and the reasoning behind that vary, however, they all tend to have the same exact problem. The majority of the botched executions are the lack of training and knowledge that the prison workers have with inserting the needle properly as well as dispensing the lethal cocktail. Which is where my questions come into play, if we could use the prison doctors, who are already on payroll, to insert and dispense the medicine, I believe that would not only cut cost way down, it would also help the lower the rates of botched executions. Barring the fact of a few obstacles, I believe with some extensive research we can find a total solution or at least a very close to all solution.

**Poster 34: The emotion behind how they built it: A comparative study of how diverse entrepreneurs express emotion while describing their entrepreneurial journey**
Taylor McCreary  
*Faculty Mentor(s): Dr. Niyati Kataria*
Dillard College of Business Administration, Department of Management, Marketing, & Legal Studies  
This study examines how entrepreneurs utilize emotion while describing their entrepreneurial journey. A total of 22 episodes from the National Public Radio podcast 'How I built this with Guy Raz' which interviews entrepreneurs about their journey was analyzed and coded for emotional language. Using an emotions color wheel, five colors representing the corresponding emotion categories (happy, fear, sad, anger and disgust) were coded in abbreviated transcripts of the podcast interviews. The emotion categories were then counted per interview to determine how many times the entrepreneur alluded to that emotion. The sub categories for each emotion primary category were also coded. Using graphical pie charts, our findings visually highlight how entrepreneurs vary in the number of times they express each emotion
category. Special focus is placed on uncovering any trends differentiating how genders (male vs. female), race (black vs. other persons of color vs. white) and age (over 45 vs. under 45) vary with respect to the type and frequency of emotion category expressed by the entrepreneur. This research is intended to shed light on whether or not emotions are expressed differently by entrepreneurs when organized by sex, race and age. We also captured how many times entrepreneurs discussed the roles of persistence and luck in their journey as well as what motivated them. Our findings indicate that black entrepreneurs tended to discuss the role of family more than entrepreneurs of other races. We also find that women are more likely to express emotions than men when discussing their entrepreneurial journey.

**Poster 35: Three Phase Teacher Success Strategy Training Program: Persona Development, Entrepreneur Skills, and Emotional Labors**
Carl Joseph Alfert
*Faculty Mentor(s): Dr. Christina Janise McIntyre; Dr. Emily Reeves; Dr. Daphney Curry*
West College of Education, Department of Curriculum & Learning

Teachers are quitting by the thousands annually during their first five years (Haynes 2007), and studies reveal the top reasons behind why untenured teachers, once filled with dreams of making the world a better place, are leaving: low job satisfaction, perception of low pay, and excessive administrative duties (Haynes 2007). Phase one has been completed. This study will focus on phase two of a three-part program: Emotional Labor Management Training. The workshop discusses life v. work balance, emotional labors, perceptions, and interpersonal communication. Upon completion of the presentation, two formative assessments will be administered: The Positive and Negative Affect Schedule (PANAS) and Teacher Concerns Questionnaire (TCQ). The presentation will be evaluated for its effectiveness indicated by an increased valence in goal characteristics and decreased psychological distance ultimately leading to growth in the participant's motivation to succeed, an indicator of retention (Ramlall 2004).

**Poster 36: How Best to Learn Foreign-Language Vocabulary: Comparing Published Research and Student Surveys**
Frida Arredondo
*Faculty Mentor(s): Dr. Jeffrey Oxford*
Prothro-Yeager College of Humanities and Social Sciences, Department of World Languages & Cultures

The general goal of this project is to provide those students studying a foreign language at MSU with different techniques they can apply to their learning of vocabulary. This is essential because learning vocabulary is an important part of the journey of learning a foreign language. In order to fulfill our goal, two general areas of the project were crafted. One, to do a critical content analysis of research related to our topic. Second, to obtain feedback from students taking a foreign language regarding their approach to learning vocabulary. First, we conducted a literature review to analyze published research works related to different approaches to acquiring vocabulary. From our first part of the research, we were able to find a wide variety of strategies and methods that were tested and proven to be good to learn vocabulary, however, most of them were not very suitable for college students. Consequently, the second part of our research is crucial to better accomplish our goal. Finally, for our second area of the research; interviews were conducted to current MSU students that had at least taken a semester of a foreign language. The purpose of the surveys is to discover what learning strategies are students using to learn vocabulary. I am going to present useful information for learning foreign language vocabulary as derived from the survey analyses.
2019 Celebration of Scholarship
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