



UNIVERSITY of  
**LOUISIANA**  
L A F A Y E T T E

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## **Honors Program**

presents the

# ***12<sup>th</sup> Annual Fall Undergraduate Research Invitational***

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**Friday November 22<sup>nd</sup> & Saturday November 23<sup>rd</sup>, 2019**

Atchafalaya Ballroom of the Student Union  
UNIVERSITY OF LOUISIANA AT LAFAYETTE

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### **Participating Schools:**

Dillard University  
Grambling State University  
Louisiana State University  
Loyola University New Orleans  
McNeese State University  
Nicholls State University  
Northwestern State University  
Southeastern Louisiana University  
Southern University and A&M College  
University of Louisiana at Lafayette

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*This conference is brought to you with the support of the*  
University Honors Program  
Office of the Vice-President for Research  
LaCOEUR  
College of Liberal Arts  
College of Sciences  
College of Engineering

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## **Acknowledgements**

I would like to take the opportunity to thank a number of people who made this possible. No undertaking this large is ever created by one person. The thanks go to Dr. Ramesh Kolluru, Vice President for Research, Innovation, and Economic Development, Dr. Terrence Chambers and the Undergraduate Research Committee, without whose help this would never had happened. Thanks to the staff at Honors, Mr. Ryan Winters, Mrs. Renauda Helaire, and Professor Mary Ellen Stegall for their continuous support and service to this project. Thank you also to our esteemed college deans for their unwavering enthusiasm and support. Additional thanks to the faculty for their tireless efforts in helping and encouraging students to pursue undergraduate research. We thank all of our volunteers who have dedicated personal time and effort to help this event run smoothly. We also appreciate the directors and staff at the UL Lafayette Student Union for graciously making their buildings available to us. Lastly, I wish to acknowledge all the time and energy that the students who attend this conference expend to create their work and to come to Lafayette to share it.

### ***About the University of Louisiana at Lafayette***

Founded in 1900, the University of Louisiana at Lafayette (then the Southwestern Louisiana Industrial Institute, the largest member of the University of Louisiana System, is a public institution of higher education offering Bachelor's, Master's, and Doctoral degrees. Within the Carnegie classification, UL Lafayette is designated as a research university with high research activity. The University's academic programs are administered by the Colleges of Arts, Education, Engineering, General Studies, Liberal Arts, Nursing & Allied Health Professions, Sciences, the B.I. Moody III College of Business Administration, and Graduate School.

The University is dedicated to achieving excellence in undergraduate and graduate education, in research, and in public service. For undergraduate education, this commitment implies a fundamental subscription to general education, rooted in the primacy of the traditional liberal arts and sciences as the core around which all curricula are developed. The graduate programs seek to develop scholars who will variously advance knowledge, cultivate aesthetic sensibility, and improve the material conditions of humankind. The University reaffirms its historic commitment to diversity and integration.

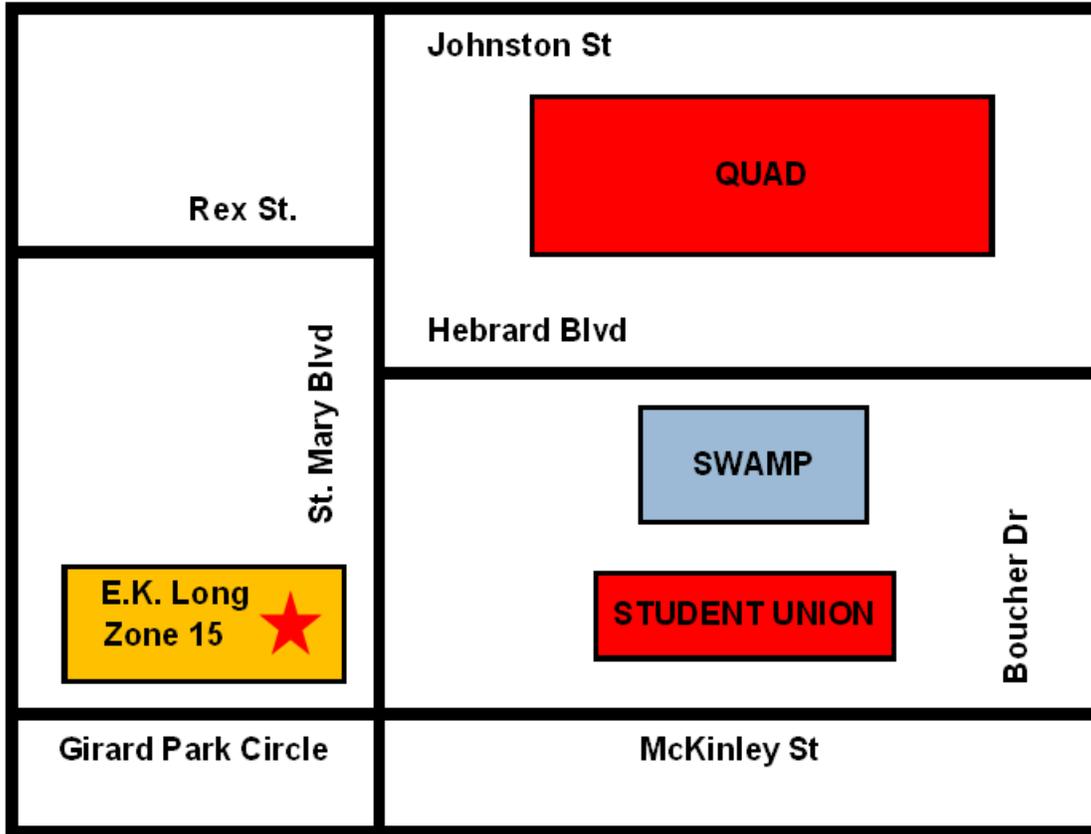
Thus, through instruction, research, and service, the University of Louisiana at Lafayette promotes regional economic and cultural development, explores solutions to national and world issues, and advances its reputation among its peers.

### ***About the University Honors Program***

The Honors Program at the University of Louisiana at Lafayette provides serious and highly motivated undergraduate students with an enhanced set of educational opportunities so that those students who seek added dimension, enrichment, and challenge in their studies may find realization of their potential. In a society where Honors programs are short-lived and superior education is no longer highly valued, UL Lafayette stands proud as one of the earliest established programs of its kind in Louisiana.

With over 1,500 students, the UL Lafayette Honors Program, one of the largest in the state, is an active member of the Louisiana, Southern Regional, and National Honors Councils. We are known nationwide as leaders in collegiate Honors education. The program is based on the philosophy *per sapientiam felicitas* – “through knowledge, happiness”.

# Parking Information



Parking has been reserved for conference participants and attendees in Zone 15 (E.K. Long) located at the corner of Girard Park Circle and St. Mary Blvd.

## Guest Speaker

Hector M. LaSala

"Beauty Will Save the World" *Dostoevsky*



It is our great pleasure to introduce Professor Hector M. LaSala from our Architecture program to speak to the rekindling of beauty in the world around us. Hector LaSala was born in El Salvador. He received his architecture degree from the University of Louisiana at Lafayette in 1973, and conducted his graduate studies at Texas A&M University. Hector has been teaching at UL Lafayette's School of Architecture and Design for over thirty years, and was a visiting professor at Virginia Tech in 1983. He is a member of the graduate faculty.

The central motivation of his academic career has been teaching, in particular freshmen. In recognition of his teaching and research, his peers have honored him with two of UL's most prestigious accolades: the 2001 Excellence in Teaching Award and the 2008 Distinguished Professor Award. Concurrently, for several years, Hector and his colleagues Geoff Gjertson and Corey Saft have conducted numerous Service Learning initiatives with over 300 students. In recognition of this effort, he received the 2007 Oliver-Sigur Humanitarian Service Award.

Additionally, he has been a member of the Kennedy Center's Partners in Education program since 1995, whose purpose is to integrate the arts throughout the K to 12th grade curriculum. For this endeavor, Hector and his team members were granted the 2004 Governor's Arts Award for Outstanding Contribution to Arts Education. Hector also currently holds the title of Slemco Professorship in the Arts.

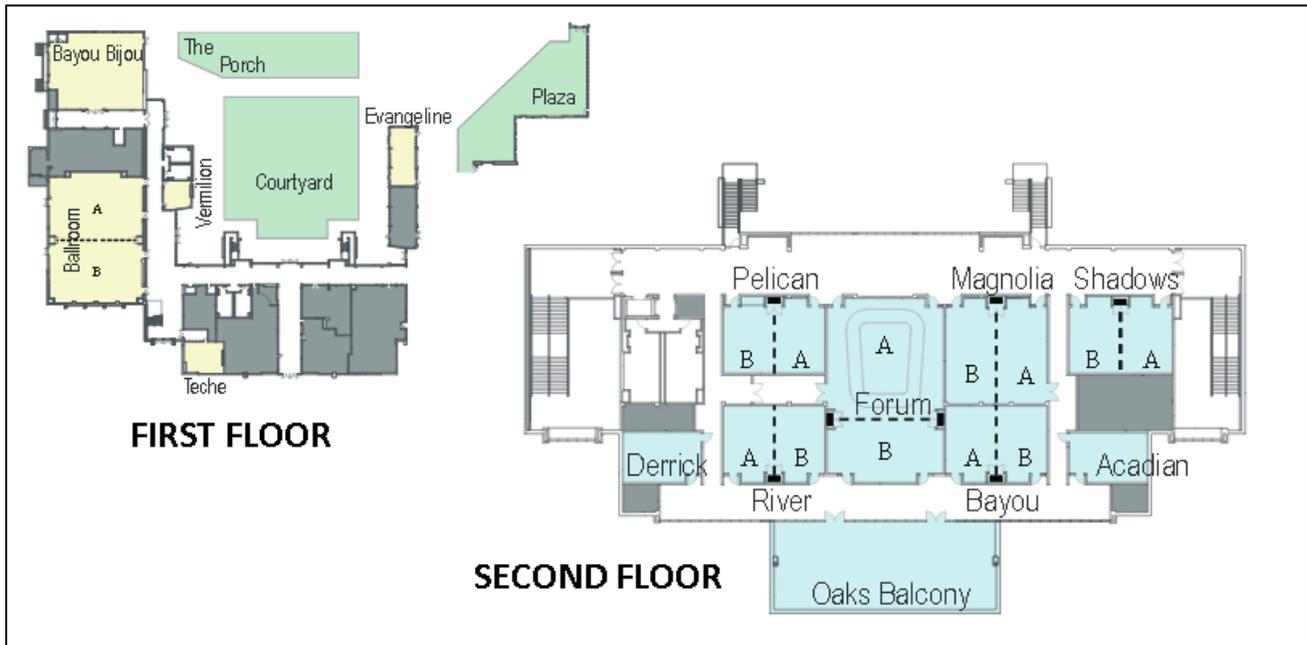
**Publications and Recent Research:** "Common Sense: Published Results of Rebuild Louisiana," (Gjertson, LaSala, McClure, and Saft) 2006

- "Up to Speed," Julia Mandel. Metropolis Magazine. 2006
- "Fabricating a Pedagogy While Mending Tears." (LaSala, Gjertson) 2006
- "Improvisation." ACSA Southwest Regional Proceedings. (Saft, LaSala, McClure and Gjertson) 2005
- "Accelerated Fabrication: A Catalytic Agent Within a Community of Caring" (LaSala, Gjertson). M.I.T. Press, Boston Massachusetts, May 2005.
- "FABRICation: Digital Improvisation." Gjertson, LaSala. National Acadia/AIA Fabrication Conference

# University of Louisiana Lafayette Honors Program Undergraduate Research Invitational Fall 2019

Dillard University  
Grambling State University  
Louisiana State University  
Loyola University New Orleans  
McNeese State University  
Nicholls State University  
Northwestern State University  
Southeastern Louisiana University  
Southern University and A&M College  
University of Louisiana at Lafayette

## UL Lafayette Student Union Map\*



\*Please note the designated presentation rooms on the following page.

**Friday, November 22<sup>nd</sup>**  
All Conference Rooms are in the Student Union

- 5:00 pm – 6:00 pm**      **Arrival and Conference Check-in**  
Hallway Outside Atchafalaya Ballroom
- 6:00 pm – 7:15 pm**      **Banquet & Keynote Speaker**  
Atchafalaya Ballroom
- 7:30 pm – 8:30 pm**      **Poster Session 1**  
\*Magnolia Room — Biology  
\*Pelican Room — Psychology, Criminal Justice  
\*Shadows Room — Engineering, Physics
- 8:45 pm – 9:45 pm**      **Poster Session 2**  
\*Magnolia Room — Chemistry, Sciences  
\*Pelican Room — Computer Science, Health, Archaeology  
Environmental Science, Communication  
\*Shadows Room — Kinesiology, Physiology, Anthropology  
Family & Consumer Science, Sociology

**Saturday, November 23<sup>rd</sup>**

- 7:00am – 8:30am**      **Breakfast** (Hotel Guests Only @ Hotel Restaurant)
- 8:30am – 9:45am**      **First Oral Session 6 total – 2 per room**  
\*Breakout Rooms 1-5 See Program
- 10:00am – 11:15am**      **Second Oral Session 8**  
\*Breakout Rooms 1-4
- 11:30am – 12:45pm**      **Lunch**  
Atchafalaya Ballroom
- 1:00pm – 2:15pm**      **Third Oral Session 6**  
\*Breakout Rooms 1-3

**\*See individual presentation listings for room designations.**

**Poster Presentations**  
**Friday, November 22nd, 2019 7:30-9:45PM**  
Listed Alphabetically by Title

***A Comparison of Levels of Burnout in Occupational Therapists in Louisiana***

\*Session 2 – Pelican Room

Presenter: Ly Ly Chiasson

Area of Study: Occupational Therapy and Allied Health

Advisor/Co-Author: Jennifer Plaisance

School: Nicholls State University

Abstract:

Burnout is often described as feelings of exhaustion and dissatisfaction towards one's work experience. The abbreviated Maslach Burnout Inventory (aMBI) separates burnout into three components: emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA). Each of these three components is individually measured to determine how influential each aspect is. Purpose: This study was meant to examine levels of burnout, to identify the most prominent component of burnout, and to determine correlations between burnout and various demographic characteristics of Louisiana occupational therapists (OTs). Methods: Thirty-six occupational therapists completed a survey consisting of the aMBI and questions regarding demographic information. Results: Occupational therapists reported low Depersonalization scores and high Personal Accomplishment scores, which are indicative of low burnout levels. However, occupational therapists also reported moderate levels of Emotional Exhaustion, indicating that this is the most prominent aspect of burnout. Further analysis showed that burnout was associated with younger occupational therapists, as well as those who are unmarried. Burnout was also associated with those occupational therapists who worked with adolescents and young adults, as well as the elderly. Conclusions: This study was pursued to provide more information about burnout so that occupational therapists can become more aware of symptoms, allowing them to take the necessary steps to cope with this phenomenon. To further combat burnout, various coping mechanisms can be implemented in occupational therapy workplaces.

***A Cross-Cultural Examination of Autism Spectrum Disorder***

\*Session 1 – Pelican Room

Presenter: Maddison Benge

Area of Study: Psychology

Advisor/Co-Author: Dr. Margaret E. Cochran

School: Northwestern State University of Louisiana

Abstract:

Autism Spectrum Disorder (ASD) is characterized by neurobiological deficits consisting of difficulty in social communication and interaction; lack of skills in the ability to develop, understand, and maintain relationships; lack of social reciprocity in communication especially nonverbally; and significant impairment in an individual's life due to these characteristics (American Psychiatric Association, 2013). Diagnosis and treatment of ASD differs from country

to country, however, it may be possible to recognize a more standardized approach in identifying the indicators of ASD, as well as possible alternative effective treatment options for those affected by ASD to improve their life outlook. Although extensive research has been conducted regarding the diagnosis and treatment of this disorder, further research is needed to better standardize and define ASD so that diagnostic methods and treatments can be applied cross-culturally. Cultural traits such as gender roles, politics, sociodemographic background, and other factors appear to affect the age of diagnosis, testing protocol, and treatment options for ASD in the United States, Japan, Nepal, and Brazil.

***A New Strategy for Designing Planar Tetracoordinate Carbon Systems: Carbon Metal Clusters Possessing Magic Number Total Electron***

\*Session 2 – Magnolia Room

Presenter: Isha Sharma

Area of Study: Chemistry

Advisor/Co-Author: Kiran Boggavarapu

School: McNeese State University

Abstract:

The design of systems with tetracoordinate but not tetra carbon is an established area of chemical research. To date, strategies can be divided into two methodologies-mechanical methods which can sterically confine carbon to a plane, and electronic methods which stabilize the unique electron arrangement of planar tetracoordinate carbon. This DFT study applies magic number electron counting to carbon group 10 metal clusters of the type  $CM_n$   $CM=Zn$ , Cd, Hg;  $n=4,8$ . Stoichiometry with 12 total valence electrons are unstable in the tetrahedral conformation and prefer a pseudo planar coordination. Global minima search for clusters possessing 20 total valences electrons reveal a preference for capped, square-antiprismatic molecular geometry with a stable pseudo planar carbon geometry. Preliminary results indicate a possible connection between localized carbon geometry, and total valence electron count.

***A Parallelized In-Memory Database System for the Discovery of Predictive Co-Occurrences within Streaming Time Stamped Data***

\*Session 2 – Pelican Room

Presenter: Matthew Higginbotham

Area of Study: Computer Science

Advisor/Co-Author: Dr. Jennifer Lavergne; Ethan Franks

School: McNeese State University

Abstract:

Predictive analytics utilizes information extracted from big data (both real-time and historical) in order to forecast potential future occurrences with an acceptable level of reliability. As time progresses, especially in this information age, trends change at an explosive rate. As a result, it can be especially hard for companies and individuals to react in time to take advantage and/or properly react to these changes. Some examples are emerging disease, increased hospital patients at certain times of the year, increase/decrease in traffic accidents under certain conditions. The main objective of this project is to develop a parallelized in-memory pattern-mining framework for dynamic data mining. Utilizing an in-memory database allows for faster

information processing, dynamic structure growth as time progresses, and advanced co-occurrence discovery. By parallelizing and making modifications to the structure, this project plans to increase processing speed, allow for the discovery of new, previously undiscovered co-occurrence types, and to decrease the wait time between discovery of a new occurrence and implementation.

### ***A Qualitative Analysis of Parental Vaccination Decision Factors***

\*Session 2 – Magnolia Room

Presenter: Bailie Marsh

Area of Study: Scientific Inquiry

Advisor/Co-Author: Dr. William Housel

School: Northwestern State University

Abstract:

Fear and misinformation have fueled the anti-vaccination movement and have inspired many parents in Western countries to forgo vaccinating their children. People have opposed vaccinations since the first was developed, and despite the reduction and elimination of many infectious diseases, some parents are under the impression that vaccines are more harmful than beneficial. Safety is not the only concerning factor that causes hesitation among parents. Parents also choose not to vaccinate their children for religious reasons, socioeconomic struggles, and because of vaccination propaganda presented on social media platforms. A greater number of parents today are not utilizing common vaccinations, such as the MMR vaccine, the HPV vaccine, and the influenza vaccine, for their children. Examinations of belief and opinion are necessary to address the concerns of parents and to alternatively provide accurate information regarding the benefits of vaccines. A survey was developed to examine common factors that contributed to the decision-making process for parents who considered vaccinating their children.

### ***A review on current status of Biodegradable Plastics***

\*Session 1 – Shadows Room

Presenter: Tam T T Tran

Area of Study: Chemical Engineering

Advisor/Co-Author: Dr Srinivasan Ambatipati

School: McNeese State University

Abstract:

The global plastic production has rapidly increased from around 1.5 million metric tons in 1950 to around 348 million metric tons in 2017. This makes plastic not only the most versatile and ubiquitous material, it also created a crisis in the form of plastic waste in the world. A huge amount of daily-use synthetic plastic products is non-biodegradable such as polyethylene (PE), polyethylene terephthalate (PET), polyvinyl chloride (PVC), polypropylene (PP), polystyrene (PS), etc. Only a little fraction of plastic products is recycled and the majority of it ending up in landfills and eventually leaking into marine environments. Moreover, the decomposition of non-biodegradable plastic products under the natural environmental conditions takes from a few years to few hundred years. Biodegradable plastic products are plastic that made from biomass or petrochemical source such as starch, plant protein, oil, lignin, cellulosic materials, crude oil,

natural gas, and coal that can decompose naturally in the landfills and/or marine environment under the action of microorganisms like bacteria, fungi or the action of biological enzymes. The process of decomposition of the biodegradable plastic will release water and carbon dioxide in aerobic environment. Biodegradation takes a few weeks to a few years. That means the breaking down of chemical structure of biodegradable plastics is faster than non-biodegradable plastics. This research review will highlight the current status of available biodegradable plastics and their mechanism of biodegradation and the factors affecting the biodegradation rate. This research will also make conclusions on potentially viable processes to reduce the impact of plastic waste on the environment.

### ***Aerobic Overtraining Protocol Mitigates Glucose Intolerance and Does Not Impair Running Performance in C57bl Mice***

\*Session 2 – Shadows Room

Presenter: Hannah Hardin

Area of Study: Kinesiology

Advisor/Co-Author: David Bellar, Scott Fuller, Gregory R. Davis, Derek Scott

School: University of Louisiana at Lafayette

Abstract:

It is unclear what role glucose uptake may play in contributing to glycogen depletion in overtraining. Therefore, the purpose of the study was to determine if a treadmill overtraining protocol would affect glucose tolerance, as a measure of glucose uptake.

Methods: 18 male mice were divided into a control group (CON), exercise group (EXE), and an overtraining group (OTS). A glucose tolerance test (GTT) was performed at 0, 20, 40, 60, and 120 min pre- and post-intervention. An incremental load test (ILT) was performed pre- and post-intervention. EXE and OTS completed a 4-week conditioning protocol 5 days/week. For the next 4 weeks, EXE continued the conditioning protocol while OTS performed the overtraining protocol.

Results: There was a significant group ( $F= 31.62$ ;  $p < 0.01$ ), time ( $F= 91.24$ ;  $p < 0.01$ ), and interaction effect ( $F= 9.03$ ;  $p < 0.01$ ) for performance, as measured by EV. However, EV did not differ between the EXE ( $24.4 \pm 1.7$  m/min) and OTS ( $25.0 \pm 0.2$  m/min) groups post-intervention ( $p = 0.91$ ). There was significant group ( $F= 14.46$ ;  $p < 0.01$ ) and interaction effects ( $F= 17.37$ ;  $p < 0.01$ ), but not time ( $F= 0.84$ ;  $p < 0.37$ ) for GTT area under the curve (AUC). The AUC post-intervention for CON, EXE, and OTS were  $42413.3 \pm 1799.9$  AU,  $31948.3 \pm 2019.6$  AU, and  $25563.3 \pm 816.7$  AU, respectively. Body weight significantly increased in all groups (CON =  $5.77 \pm 0.98$  g; EXE =  $4.48 \pm 0.62$  g; OTS =  $1.88 \pm 0.36$  g), though the increase was significantly greater in the CON ( $p < 0.01$ ) and EXE ( $p = 0.04$ ) groups compared to the OTS group.

Conclusions: GTT and EV were significantly improved in EXE and OTS groups compared to CON. The overtraining protocol did not worsen exercise performance or GTT.

### ***America's Next Top Species: An Analysis of Species Recovery***

\*Session 2 – Magnolia Room

Presenter: Aron Stephens

Area of Study: Scientific Inquiry

Advisor/Co-Author: Dr. Margaret E. Cochran

School: Northwestern State University

Abstract:

Human activities such as poaching, deforestation, and habitat destruction can reduce population numbers to the point that a species is unable to recover and is ultimately driven extinct.

Typically, such species are in danger of extinction due to one or more factors associated with rarity, such as geographic range, habitat specificity, and local populations size. A species in eminent danger of extinction throughout all or a significant portion of its range may qualify for the legal designation of endangered; specific needs such as habitat, range, and presence of other species are considered when classifying a species as endangered or threatened. The Endangered Species Act serves to protect these organisms from human activities that may have a negative impact on their long-term viability. The effectiveness of this legislation may be dependent upon the life history of the target organism, the environment in which it lives, the types of human activity that affect it, and the type of organism itself. A rubric is proposed to evaluate the recovery status of endangered species and allow comparisons across classes of animals.

### ***Analysis of Cd, Cr, Cu, Pb, and V in Soils of Northwestern State University Showed No Elevated Levels That Pose Serious Health R***

\*Session 2 – Magnolia Room

Presenter: Abigail Poe & Lawson Scott

Area of Study: Chemistry

Advisor/Co-Author: Dr. Chad Thibodeaux, Mr. Millard Mangrum, Colby Koontz

School: Northwestern State University

Abstract:

This study compared the concentration of select heavy metals (Cd, Cr, Cu, Pb, and V) in soils collected from locations around the campus of Northwestern State University of Louisiana. Two sites chosen were where buildings, Guardia Hall and Caldwell Hall, had been destroyed by fire, with three additional sites sampled. In particular, this project sought to determine whether the concentration of these heavy metals was increased in locations where documented structural fires had occurred compared to other areas on campus. Samples were collected, prepared for analysis by acid digestion according to EPA Method 3050B, and analyzed using ICP-OES.

### ***Applying Cultivation Theory to New Media***

\*Session 2 – Pelican Room

Presenter: Elizabeth Butler

Area of Study: Mass Communication

Advisor/Co-Author: Dr. Claire Joa

School: Louisiana State University at Shreveport

Abstract:

The cultivation theory has been used to describe the effects of excessive television media consumption on viewers' perceptions of reality. Conceived in the late 1960s, the theory postulates that prolonged exposure to messages disseminated via mass media such as television is enough to influence or alter people's perceptions of the reality around them, beliefs, and moral values. Consequently, those who are exposed to media fail to distinguish between what is scripted behind cameras and the factual social reality around them. Numerous cultivation theory researchers have explored the media effects that media messages usually influence people's perceptions of reality by mirroring mainstream values of society. In the current media environment where television media still play a critical role in shaping key media agenda but the way it influences have changed. People watch television media through social media and create online memes using their content, thus we need to revisit the cultivation theory and discuss how the media effects have evolved into something else. The purpose of this paper is thus to explore in detail the cultivation theory and determine how it explains the effect of too much consumption of television on society; how this cultivates perceptions and influences mindsets. The paper will employ an exploratory research method to find and analyze information from Co-sources that insightfully expound on the cultivation theory assumptions in the current media environment. The research questions were proposed to examine and revisit the assumptions of the cultivation theory and the positive and negative impacts of television viewing today along with long- and short-term outcomes.

### ***Assembly of a Palladium(II) Cornered Square Macrocycle from a Cyclic Cisoid Diamide Ligand***

\*Session 2 – Magnolia Room

Presenter: Andrew D. Bratton

Area of Study: Chemistry

Advisor/Co-Author: Semin Lee, Xin Xhou

School: Louisiana State University

Abstract:

Hydrogen-bonded organic frameworks (HOF) are a class of self-assembled, porous materials held together by hydrogen bonds and other noncovalent interactions. These solid materials have found potential applications in gas-storage, gas-separation, drug-delivery, and catalysis. Here, we introduce cyclic cisoid diamide (CCD) as a hydrogen-bonding motif that also provides a 90° bend angle that allowed the design of a square-shaped macrocycles. Two pyridyl-ligand moieties were appended on either end using Suzuki cross-coupling. Upon coordination with palladium(II) corners, that also have 90° coordination angles, a CCD<sub>2</sub>Pd<sub>2</sub> macrocycle was formed. Synthetic methods of the compounds and their various characterization techniques including nuclear magnetic resonance (NMR) spectroscopy, mass spectroscopy, and single

crystal X-ray crystallography will be presented. Chirality and hydrogen bonding assemblies were closely investigated using these data. The future goal of this research is to create a HOF formed from CCD moieties that may go on to have industrial application or to contribute to future research in this area.

### ***Assessing Color Variation in Neotropical Electric Fish STEATOGENYS ELEGANS***

\*Session 1 – Magnolia Room

Presenter: Alyson Nguyen

Area of Study: Biology

Advisor/Co-Author: Dr. James Albert, Aeran Melancon

School: University of Louisiana at Lafayette

Abstract:

Steatogenys elegans is a species of freshwater electrical fish, one of three species in the genus Steatogenys. S. elegans, commonly known as the barred knifefish, is characterized by thick, dark vertical bands along its entire body. A laboratory at the University of Louisiana at Lafayette, currently under Dr. James Albert, has a preserved population of what was originally thought to all be of S. elegans, but there has been recent speculation on whether there could be individuals from more than this one species. So, a sample population of 50 fish were chosen at random from the preserved population. Each fish was photographed and then analyzed, using ImageJ to measure gray scale values of the pixels of the dark and light bands. Current results could not provide significant evidence to the existence of more than one distinct color variation. Future studies with the same population can be done utilizing a larger sample of the preserved population or measuring color values among other ways.

### ***Atom Transfer Radical Polymerization by Continuous Feeding of Activators***

\*Session 2 – Magnolia Room

Presenter: Alec Clay

Area of Study: Chemistry

Advisor/Co-Author: Dr. Yu Wang

School: University of Louisiana at Lafayette

Abstract:

Atom transfer radical polymerizations (ATRP) of methyl acrylate (MA), methyl methacrylate (MMA) and styrene (St) were conducted by continuous feeding of Cu(I)X/Ligand activators. Typically, the monomer, the initiator, and a certain amount of deactivator, Cu(II)X<sub>2</sub>/Ligand, were placed in a Schlenk flask deoxygenized by bubbling with N<sub>2</sub>. The activator, Cu(I)X/Ligand, was placed in a gas-tight syringe and was added at a constant rate to the Schlenk flask using a syringe pump. In ATRP, the Cu(I) catalyst would undergo many oxidation/reduction cycles when the propagation of polymer chains is taking place. However, some of the Cu(I) would finally be oxidized to Cu(II) irreversibly. According to the principle of halogen conservation, the end-group loss equals the amount of Cu(I) that is permanently oxidized to Cu(II). Thus, by reducing the amount of Cu(I) added to the reaction, ATRP by continuous feeding of activators sets an upper limit of the potential end-group loss. The end-group fidelity information is readily known at the beginning of the reaction.

### ***Biosurveillance of Ticks and Associated Pathogens in Belize***

\*Session 1 – Magnolia Room

Presenter: Razan Amira Badr

Area of Study: Biology

Advisor/Co-Author: Dr. Yvonne-Marie Linton, John Tarpey, Reed Mitchell, David Pecor

School: Loyola University New Orleans

Abstract:

Belize is a tropical country hosting a rich biodiversity and diverse landscapes, ranging from lowlands and swamps in the north to rainforests and mountainous regions in the south. It is also training grounds for U.S. soldiers. Ticks can carry and transmit dangerous pathogens that put both local residents and soldiers at-risk. Herein we compare 564 ticks collected in two villages (Red Bank & San Roman) in the SE district of Stann Creek in 2018 with those collected in 2014 & 2015 from Cayo (SW), Orange Walk (NW), and Corozal (N) Districts (n = 154) (Polsomboom et al. 2017).

Stann Creek ticks were primarily collected off local dogs, with a few samples collected from horses and by dragging. DNA was extracted from 564 ticks and DNA barcodes successfully obtained from 417 confirming the presence of 10 taxa: *Amblyomma auricularium*, *A. coelebs*, *A. imitator*, *A. maculatum*, *A. nr oblongoguttatum*, *A. ovale*, *A. sp. nr ovale*, *A. tapirellum*, *Dermacentor nitens*, *Rhipicephalus sanguineus*. All 10 taxa were collected on dogs, *A. tapirellum* and *D. nitens* on horses, and *A. ovale* and *D. nitens* found by environmental dragging. Differences were detected in tick species recovered across the four districts sampled to date (Corozal (N), Orange Walk (NW), Cayo (SW) and Stann Creek (SE)). All 564 ticks were also screened for *Rickettsia* spp., *Babesia* spp., *Borrelia microti*, *Borrelia* spp., and *Ehrlichia* spp. using a series of available species- and genus-diagnostic primers. All positive amplicons were sequenced and resultant sequences blasted in GenBank. Seven ticks were found to be infected: six by *Rickettsia parkeri* (*A. ovale* (n=5), 1 unidentified) and one by *Ehrlichia canis* (specimen unidentified). All infected ticks were restricted to San Roman village. It is important to understand the connections between vectors and the pathogens they may carry to work towards preventative measures and improving healthcare.

### ***Cell-Penetrating MK2 Inhibitory Peptide Blocks LPS-Induced Expression of Pro-inflammatory Cytokines in HepG2 Hepatocytes***

\*Session 1 – Magnolia Room

Presenter: Tiffany Francis

Area of Study: Molecular Biology

Advisor/Co-Author: Dr. Scott Poh, Dr. Paul Kim, Dr. Audrey Kim, Durina Dalrymple,  
Yaswanthi Yanamadala, Victor Carriere

School: Grambling State University

Abstract:

Mitogen-activated protein kinase-activated protein kinase 2 (MAPKAPK2) or MK2 is a downstream effector of the MAPK family member p38. The p38-MK2 signaling axis is well known to regulate the inflammatory response, thus it is an important target of anti-inflammatory drugs. For MK2, as with other intracellular targets, delivering the drug across the plasma membrane barrier represents a major challenge. Here we conjugate an anti-inflammatory

peptide (AIP-1) selective for MK2 to a novel cell-penetrating peptide (CPP-AIP-1) to enhance intracellular delivery. We evaluated the cytotoxicity, efficacy, and intracellular uptake of these therapeutic peptides in an in vitro model of liver inflammation using HepG2 human hepatoma cells challenged with lipopolysaccharides (LPS). HepG2 cells were treated with 0.1–1000  $\mu$ M AIP-1 or CPP-AIP-1 for 24 hours to assess cytotoxicity. A significant decrease in cell viability was observed in response to 1000  $\mu$ M CPP-AIP-1, whereas 1000  $\mu$ M AIP-1 had no significant effect on cell viability. Treatment with either peptide at 300  $\mu$ M did not alter cell viability relative to untreated control. We selected the next highest noncytotoxic dose tested - 100  $\mu$ M - as the therapeutic dose.

HepG2 cells were treated for 24 hours with 1 ng/mL LPS to induce an inflammatory response and co-incubated with 100  $\mu$ M AIP-1 or 100  $\mu$ M CPP-AIP-1. We observed no changes in mRNA expression of the housekeeping genes ACTB, B2M and RPLP0 under any of the treatment conditions. We found that LPS significantly upregulated the mRNA expression of the pro-inflammatory cytokines CXCL8 and TNF, and that CPP-AIP-1 (but not AIP-1) co-incubation decreased expression to basal levels. Consistent with these mRNA expression data, LPS significantly increased CXCL8 secretion, and this was inhibited by CPP-AIP-1 only. Inflammation clearly plays an important role in the development and progression of many diseases. Our results demonstrate the functionality of a cell-penetrating peptide in inhibiting the MK2-mediated inflammatory response.

### ***Collaborative Interaction in Large Explorative Environments***

\*Session 2 – Pelican Room

Presenter: David Broussard

Area of Study: Computer Science

Advisor/Co-Author: Dr. Christoph Borst, Jason Woodworth

School: University of Louisiana at Lafayette

Abstract:

Building collaborative VR applications for exploring and interacting with large or abstract spaces presents several problems. Given a large space and a potentially large number of possible interactions, it is expected that users will need a tool selection menu that will be easily accessible at any point in the environment. Given the collaborative nature, users will also want to be able to maintain awareness of each other within the environment and communicate about what they are seeing or doing. This project, developed in the context of a collaborative geological dataset viewer, is designed to solve these problems.

### ***College Female Students' Perceived Body Shapes and Their Clothing Fit Issues***

\*Session 2 – Shadows Room

Presenter: Autumn Hamilton

Area of Study: Family and Consumer Sciences

Advisor/Co-Author: Jung-Im Seo

School: Southern University and A&M College

Abstract:

It is difficult to find a perfect fitted clothing in the current retail stores because the current apparel companies only produce standardized clothing; this standardized clothing is known as

ready-to-wear (RTW). Standardization causes problems in consumers who have different body shapes and personal preferences of clothing fit. The challenge for the apparel industry is to produce clothing that satisfies all body types. Clothing fit is the most important issues while consumers are wearing and purchasing clothing. Despite the importance of clothing fit there is little research about ready to wear clothing fit issues. In this study, we explore RTW clothing fit satisfaction and how it corresponds to consumers' perceived body shapes by searching the locations (waist, hips, bust girth, and back width) in RTW clothing which cause clothing fit issues for each body shape. The study used a convenience sample of African American female college students. 150 female participants were recruited for data analysis. This study demonstrates that African-American female college consumers perceive their body shapes quite differently from their actual body shapes, leading to specific preference for their clothing dependent on body shape groups. The study found that more than 36% (n=55) participants believed their body shapes to be an hourglass shape; the hourglass shape participants were more satisfied with clothing fit in the dress and blouse categories than the other body shapes (rectangular pear and inverted triangular shapes) participants. The inverted triangular group responded that they felt tight-fitting around the bust, whereas the rectangular group complained the back width was too tight. This study demonstrates that each group has certain locations in RTW clothing that are uncomfortable or unfitting.

### ***Condom Availability, Attitudes, and Intentions***

\*Session 1 – Pelican Room

Presenter: [Kelsey Mayes](#)

Area of Study: Psychology

Advisor/Co-Author: Dr. Amy Brown, Kelsey Mayes, Sam Arbella, Cristian Rivera, M.S.

School: University of Louisiana at Lafayette

Abstract:

Specifically, for sexually active college students, condom use is an important safe-sex behavior that significantly reduces risk of both pregnancy and STDs (CDC, 2019). The primary aim of this study was to see if providing free access to condoms in an unattended dispenser in a student residence hall could act as an intervention and improve attitudes, perceived norms, and intentions to use condoms. Based on previous literature, we predicted that the intervention group's condom use attitudes and behaviors would improve after having access to condoms compared to the control group. Attitudes, Perceived Norms, and Behavioral Intentions were each analyzed using a mixed-model ANOVA in which residence hall (intervention dorm and control dorm) was a between-subjects factor and time (time1 and time 2) was a within-subjects factor. Each examined the main effect of residence hall, main effect for time, and the residence hall by time interaction effect; however none of these effects were statistically significant (all ps > .05). Fewer than half of the time 1 participants (N=283) completed the time 2 survey, resulting in low statistical power. Also, the condom dispenser was in only one location and was unknowingly removed two weeks prior to the designated end time of the study. These limitations should be considered for future research on condom availability, attitudes, and intentions.

### ***Critical Behavior at Higher Dimensions***

\*Session 1 – Shadows Room

Presenter: Peyton Tastet

Area of Study: Physics

Advisor/Co-Author: Dr. Michalis Charilaou

School: University of Louisiana at Lafayette

Abstract:

Processes in the world around us are governed by phase transitions modifying the state of interacting many-body systems, which can be anything ranging from glaciers melting to a crash of the stock market. The criticality of these phase transitions is universal, only depending on the dimensionality of the system. Critical behavior of higher dimensions remains poorly understood. A powerful and insightful model to study phase transitions is the Ising model, which considers interacting spins and, depending on the dimensionality, undergoes a phase transition. Through the use of stochastic (Monte Carlo) methods, the Ising model can shed light on the critical behavior of an interacting system near a phase transition. In this study we perform Monte Carlo simulations of the Ising model with a particular focus on the critical behavior at higher dimensions. At higher dimensions, the role of fluctuations changes, and so does the critical behavior of the model. Therefore, by looking at criticality and fluctuations, we aim to obtain a glimpse of the reality of higher-dimensional worlds.

### ***Design and fabrication of a customized testing apparatus for biological beams***

\*Session 1 – Shadows Room

Presenter: Blake Arceneaux

Area of Study: Mechanical Engineering

Advisor/Co-Author: Dr. Tanvir Faisal Ph.D, James Cochran, Regan Lemaire, Tyler Vrtis

School: University of Louisiana at Lafayette

Abstract:

The mechanical properties of the plant are due to the efficiency of its morphology at different length scales ranging from cell wall to the whole organ. The resilience of plants and their organs in the turbulent wind is the primary phenomenon that drives this study into understanding the structure-property relationship at the plant organ level. A plant petiole, a stalk of material that attaches the stem to the leaf, undergoes the majority of the environmental stress common to plants. Commonly, the stress in petioles is due to wind, rain, and a verity of other environmental factors. The recovery of the petiole is what many studies into this biological structure revolve around. The goal of this project is to design a device capable of determining the torsional and tensile strength of petiole with different sizes, considered as biological beams, to gain a better understanding of their mechanical properties. A conventional universal testing machine used in engineering materials is not viable for measuring the mechanical properties of biological beams because of their various sizes, irregular cross-sectional area, and materials softness over conventional materials. To resolve these potential problems, a customized testing apparatus will be designed and fabricated. The challenge of gripping the biological samples will be accomplished by fastening various sized aluminum cups to rigid structures and binding the biological beams to the holders with thermal plastic. The apparatus is designed that the load-deflection mechanism is fully automated using a mobile frame mounted to a linear actuator to

provide a translating force for tensile load and stepper motor to apply rotational force, which is controlled by an Arduino microcontroller motherboard. The device controller is able to detect changes in time, velocity, and power to determine the forces acting of the specimen. The project is unique because of its ability to test both tensile and torsional properties through automated means.

### ***Detection of Autophagy Proteins in Peripheral Blood of Crocodylians***

\*Session 1 – Magnolia Room

Presenter: Emily Hedlesky

Area of Study: Biology

Advisor/Co-Author: Amber Hale, Mark Merchant

School: McNeese State University

Abstract:

Many non-mammalian vertebrates, including Crocodylians, have nucleated red blood cells (RBCs). This fact presents an opportunity to study cellular processes in peripheral blood that do not occur in mammalian RBCs which are anucleate. A major advantage of using venous blood draws is that it is a minimally invasive technique. Additionally, animals can be sampled repeatedly over time, allowing for longitudinal data collection. Other methods of sampling for expression and/or protein analysis often include sampling vital organs and result in sacrifice of the animal. Autophagy is a catabolic, sub-cellular process that is activated by cellular stress and in some normal developmental pathways. It is well-documented that autophagy is essential for mammalian RBC differentiation, but mature mammalian RBCs do not carry out canonical autophagy. In this study we are optimizing protocols for detection of autophagy-related proteins in Crocodylian RBCs. We have previously shown that some autophagy proteins can be detected in whole blood, but this includes some white blood cells as well. Using a RBC enrichment protocol, we will use protein extracted from RBCs to run western blots. This project is the first to assay the autophagy process in mature, nucleated RBCs in any species. Ultimately, we plan to develop a protocol to assay autophagy activation or inhibition from peripheral blood draws. Our future aims include examining the role of autophagy during brumation, as it may serve to sustain cells during winter anorexia.

### ***Development of a 3D Bioprinter by Modifying an FDM 3D Printer***

\*Session 1 – Shadows Room

Presenter: Andrew Hoffpauir

Area of Study: Mechanical Engineering

Advisor/Co-Author: Dr. Tanvir Faisal, Mynmayh Khamvongsa, Kent Milton

School: University of Louisiana at Lafayette

Abstract:

Organ transplants give patients the ability to live longer, but they are scarce and often difficult to match physiologically. Organ transplants can have adverse side effects and are so expensive that some patients cannot afford to undergo one. More importantly, only a limited supply of suitable organs exists, leading to many patients put on waitlists. The growing demand for research of 3D bio-printed organs will allow doctors to make patient-specific artificial organs that can function as a living organ. 3D bioprinting of artificial organs can eliminate some of the

difficulties associated with organ transplants. However, one of the major challenges of performing new research with biological materials is the expensive cost of 3D bioprinters. Therefore, developing a cost effective but functional bioprinter by modifying a fused deposition modeling (FDM) 3D printer is a crucial step of conducting progressing cutting-edge research. An FDM 3D printer typically uses a thermoplastic filament that is heated to its melting point and extruded in layers to create a 3D object. In this work, a Qidi X Pro 3D printer was used as the base to modify and create the 3D bioprinter. A large volume syringe pump extruder (LVE) for desktop 3D printers was used to adapt the Qidi X Pro into a bioprinter, such that the stepper motor from the Qidi X Pro is attached to the 3D printed LVE assembly, which enables the extrusion of bio-ink. The modification helps to convert it to a single-nozzle 3D bioprinter.

### ***Development of a web-based journal publication database and its reader app***

\*Session 2 – Pelican Room

Presenter: Eraj Khatiwada

Area of Study: Computer Science

Advisor/Co-Author: Dr. Minh Huynh

School: Southeastern Louisiana University

Abstract:

This project develops a simple system for e-journal publication. This system accepts articles in Word and convert them into HTML and then display them on different devices. In this presentation, we illustrate how the article is prepared, how Firebase is used and how the App works. The key technologies for the prototype development are: Firebase and Ionic framework. The process includes the following steps. First, an article is prepared in Word. Then, it is uploaded as a Google Doc. The article is converted into HTML code through JavaScript. Next, the HTML is copied into Firebase. A JSON structure is created in Firebase to store the content including the entire HTML code. On the App side, the following steps are implemented. The Reader App connects to the Firebase database where the articles are stored. The App then retrieves the content. The order of the content is arranged as follow. On top is the title page of the journal. Next is the issue page to display the current issue and the previous issues. Below the issue page is the table of content associated with a specific issue of the journal. From the table of content, user can select a specific article to read. Features on the article page include setting for text, fonts, and background, links to different parts within the article, and side menu for navigation. The potentials of this e-journal publication system are that it is simple to use and can work across different platforms because it is based on HTML. The content can be prepared and stored in an efficient way. The article can be displayed on different devices. Additional capabilities such as searching, downloading, offline reading can be added to the reader in the future.

### ***Digital Clout and the Spread of Disinformation***

\*Session 2 – Pelican Room

Presenter: Ariana Buckner

Area of Study: Computer Science

Advisor/Co-Author: Dr. Reg Tucker

School: Louisiana State University

Abstract:

What influence does digital clout have on the spread of false information? Digital clout is conceptualized as social media profile followers, as well as likes and comments on social media posts. Social media companies employ user engagement metrics to understand, analyze, and predict user engagement. It allows social media companies to extract patterns of user behavior both on and offline. One behavior of interest is the sharing of false information online. Recent scholarship has found that false information spreads faster than truth (Vosoughi, Roy, & Aral, 2018). This paper builds on these findings by examining whether digital clout influences the spread of false information. We hypothesize that the more digital clout an account has, the more likely users are to share false information from that account. In order to examine our research question, we employ social contagion theory which posits that social reinforcement from peers influences adaptation of a behavior in social networks (Centola 2010). In an experiment, we test causality between digital clout, a measure of social reinforcement, and sharing behavior of false information. The spread of false information impacts political (Bessi & Ferrara 2016; Marchal et al., 2019), financial (Bollen, Mao, Zeng 2011), and everyday life (Lewandowsky, Ecker, & Cook, 2017). Extant literature centers around diffusion patterns of false information (Del Vicario et al. 2016; Quattrociocchi 2016; Bessi 2017; Vosoughi, Roy, & Aral 2018; Shin, Jian, Driscoll & Bar 2018) and its effect on exposed users (Zollo et al. 2015; Lewandowsky, Ecker, Cook 2017). We enter the current conversation by examining causal effects of digital clout on information sharing. The purpose of the paper is to advance understanding of peer influence effects on sharing behavior, within the context of false information in particular.

### ***Distinguishing between injection-based Attacks and Malfunctioning ECUs in an In-Vehicle CAN Network***

\*Session 1 – Shadows Room

Presenter: Kaleb Leon

Area of Study: Computer Engineering

Advisor/Co-Author: Dr. Raju Gottumukkala

School: University of Louisiana Lafayette

Abstract:

One of the challenges in evaluating the safety and security of future electro-mechanical systems is to be able to detect faults and cyber-attacks. One of the limitations of existing data-driven approaches is that these methods cannot distinguish between an attack and a fault. This continues to be a challenge. The Controller Area Network (CAN) bus is the standard communication method between the Electronic Control Units (ECUs) of automobiles. However, CAN bus lacks security mechanisms and it has recently been shown that it can be attacked remotely. Several anomaly detection algorithms have been proposed to identify anomalous data in the CAN Bus. However, these techniques fail to distinguish between injected attack data and

the data generated due to a malfunction in the ECU. While identifying unusual data in the CAN bus is critical to security of the vehicle, the solution to recover from injection-based attack and malfunctioning ECU scenarios is different. Identifying the source of the anomalous data and the reason behind the anomaly enables us to handle these two scenarios separately. In addition, the ECUs are not designed to perform computationally intensive work, any solution to this problem should not add significant workload to the ECU. To solve this problem, we design a deep learning-based signal authentication technique to generate a watermark that is used to identify the data generated by an ECU. From the data generated by an ECU, we extract a set of features and generate a dynamic watermark from the features. This watermark is then added to the data. At the receiver ECU, the signal is demodulated to separate the watermark and the actual signal. The watermark is authenticated against the features generated from the data. We evaluate this technique on the data-set that contains the data from both a malfunctioning ECU and injection attacks from the vehicle.

### ***Do dimensions matter? Development of an eye-hand coordination test in virtual reality***

\*Session 2 – Shadows Room

Presenter: Brandon Phillips

Area of Study: Kinesiology

Advisor/Co-Author: Dr. Marc Dalecki & Dr. Nikita Kuznetsov

School: Louisiana State University

Abstract:

Developing sensitive assessment tools that can predict group differences and detect performance declines in clinical and neurological populations is one of the major goals of several current research approaches. In the past few years, a specific eye-hand coordination task became a quite successful assessment tool which uses two different task conditions, a standard mapping condition with eyes and hands moving into the same direction (e.g., when reaching for a coffee cup while also looking at it), and an eye-hand decoupling task where the eyes and hands are forced to moving into different directions (e.g., reaching for a cup of coffee while simultaneously looking away from the cup). This experimental approach was successful in detecting early (mild cognitive impairment, Alzheimer's) or prolonged (concussion history) performance declines in different neurological populations. This experiment is based on a previous laptop touchscreen 2-D setup. However, 3-D virtual reality setups are on the rise and show promising potential for being more realistic and immersive when compared with 2-D settings. This has been shown in healthy but also neurological populations such as in Parkinson's. We therefore expect that an eye-hand decoupling task in 3-D virtual reality may have the potential to be even more sensitive in pinpointing neurological changes in various populations. The first aim of this project is to transfer the existing eye-hand decoupling task from a 2-D laptop-based into a 3-D virtual reality setting. We plan to test 20 healthy young adults ranging from ages 18-34. This data will then be compared with already existing data from a young adult group from the previous 2-D test. We hypothesize young adult's eye-hand coordination performance declines in 3-D compared to 2-D, and that the decline will be more pronounced in the eye-hand decoupling task.

### ***Effects of Cisplatin on Prey Detection in Nematostella vectensis Related to Prey Density***

\*Session 1 – Magnolia Room

Presenter: Alyce Puckett

Area of Study: Biology

Advisor/Co-Author: Dr. Patricia Mire-Watson

School: University of Louisiana at Lafayette

Abstract:

Chemotherapy drugs are commonly used to treat cancer but often cause undesirable side effects. In humans, chemotherapy treatments such as Cisplatin are linked to ototoxicity, which causes hearing and balance impairment (Schacht et al., 2012). Hair cells, sensory cells in the inner ear, are involved in hearing and balance in humans, and in sea anemones hair cells on their tentacles function in mechanoreception of prey (Mire-Watson et al., 2010). According to a previous study, the hair cells of sea anemones are similar in composition and function to those of mammals, and this organism can be used as a model for studying ototoxicity in mammals. I have previously found that 1.5  $\mu\text{M}$  Cisplatin significantly reduces hair bundle density on tentacles of *Nematostella vectensis* but does not significantly impair the ability of hair cells to detect prey. This study seeks to determine whether the ability of treated hair cells to detect prey is a function of prey density. It was hypothesized that as prey become scarcer, it would be more difficult for hair cells in anemones treated with Cisplatin to detect prey. Four groups of 6 animals were treated with 1.5  $\mu\text{M}$  Cisplatin for 24 hours alongside their control groups; the animals were allowed to feed for 30 minutes. The four treatment groups received 120, 90, 60, and 30 shrimp. The numbers of shrimp eaten were determined and compared among the groups. It was found that for the treatment groups receiving 120, 90, and 60 shrimp, anemones ate significantly fewer shrimp than their respective control groups while the group that received 30 shrimp did not. This result indicates that the shrimp were too scarce for a difference to be detected. The data show that there are certain parameters in which the effects of Cisplatin are evident in prey capture. Overall, the data support the hypothesis that it becomes more difficult for the hair cells to detect prey after treatment with Cisplatin when prey density decreases.

### ***Effects of Curing Regimes on Fly Ash- Based Soil Geopolymers Mixtures***

\*Session 1 – Shadows Room

Presenter: Fahad Bux

Area of Study: Civil Engineering

Advisor/Co-Author: Mohammad Jamal Khattak , Daniel Odion

School: University Louisiana at Lafayette

Abstract:

The strength of cement stabilizes soil and reduces when subjected to a higher temperature. This isn't particularly good for highly tropical regions. More importantly, fly ash known as a cement substitute combined with alkaline solution, otherwise called geopolymer, has been known to produce strong binding property and solid resistant to high temperature. Therefore, the purpose of this research was to investigate the relationship between heat curing temperature and delay time as the influencing parameters of compressive strengths of geopolymer mixtures. Geopolymer samples were prepared under different targeted heating temperatures which were room temperature and heat curing ranges of 45°C, 60 °C, and 75°C for a curing period of 72

hours in the oven. More so, the specimens were compacted after delay time of mixing ranging from 1 to 3 hours. The mechanical properties of geopolymers were determined with the compressive test and the comparison was made through graphical illustration with soil cement and geopolymer control specimens cured in ambient temperature for 28 days. The results showed that the compressive strength of soil geopolymers under heat curing condition developed quickly when there is an increase in temperature and the optimum temperature was found to be 75°C at 72-hour oven curing. Also, the delay time results showed that a delay between mixing and compaction will affect the outcome of the strengths of geopolymers and the effect increases with time. It can be concluded that the temperature curing and delay time play an important role in accelerating and achieving the compressive strengths respectively as comparing to curing in ambient condition.

***Effects of Eichhornia crassipes (water hyacinth) presence and herbicide treatment 2-4,D on algal in an urban wetland***

\*Session 2 – Pelican Room

Presenter: Kyle Whitfield

Area of Study: Environmental Science

Advisor/Co-Author: Phil Bucolo

School: Loyola University New Orleans

Abstract:

*Eichhornia crassipes* (water hyacinth) is an invasive floating angiosperm proliferating and clogging wetlands across South Louisiana. The herbicide 2-4, D is often deployed to kill the hyacinth inducing decomposition. In order to investigate the effects of both water hyacinth presence and deployment of 2-4, D on epiphytic and phytoplanktonic community shifts, a mesocosm experiment commenced where presence and absence of the plant as well as treatment with herbicide were investigated. Water quality results indicate that the presence of water hyacinth treated with 2-4, D significantly impacted dissolved oxygen (D.O.). However, the presence of untreated plant populations showed no effect on D.O. Preliminary data illustrates that the presence of water hyacinth does not inhibit algal abundances. Data is continuing to be processed, but water quality results show that the decomposition of herbicide treated water hyacinth can lead to hypoxic events.

***Effects of Registered Memberships on Australian National Rugby League Teams: A 2011-2019 Analysis***

\*Session 2 – Shadows Room

Presenter: Landon Thibodeaux

Area of Study: Kinesiology

Advisor/Co-Author: Dr. Peter Omondi-Ochieng

School: University of Louisiana at Lafayette

Abstract:

The goal of this presentation is to evaluate the effects of registered memberships on: (a) home attendance, (b) on-field success, & (c) team tradition in the Australian National Rugby League.

### ***Evaluating the Necessity for a Research-Based Child Development Laboratory in Southern Louisiana***

\*Session 2 – Shadows Room

Presenter: Summer Saulter

Area of Study: Family and Consumer Science

Advisor/Co-Author: Kenyetta Nelson-Smith, Aravian Louis

School: Southern University

Abstract:

This research investigates the importance of a quality, research-based child development laboratory at Southern University Baton Rouge. There exist a multitude of traditional and nontraditional child care options across the nation. Many persons opt to take care of their children themselves or let a close relative or friend care for their young child. As such, there are many parents who opt to work, but who prefer the opportunity for their child[ren] to be in a warm, nurturing environment, rich in early childhood academics, cultural awareness, and strong social and cognitive development opportunities, which will adequately prepare their children for Kindergarten. The purpose of this research is to determine if there is a desire for an additional child development laboratory in East Baton Rouge (EBR) Parish. With a population over 400,000 persons, there exist one laboratory in the parish, located on Louisiana State University's campus, serving only 175 children of the 29,472 children under age five (5) in the parish. This research aim to prove the need for a high quality, research-based child development laboratory located in the northern part of the parish.

### ***Expansion of Presence of *Diploechiniscus horningi* in Eastern United States***

\*Session 1 – Magnolia Room

Presenter: Isha Sharma

Area of Study: Biology

Advisor/Co-Author: Harry Meyer

School: McNeese State University

Abstract:

Tardigrades (Phylum Tardigrada), also known as water bears are microscopic panarthropods. They are found in marine, freshwater, and terrestrial habitats. The number of terrestrial and freshwater species exceeds 900. Approximately, there are 30 families, 142 genera, 1298 species and 34 additional subspecies. The genus *Diploechiniscus* now has both *Diploechiniscus oihonnae* and *Diploechiniscus horningi* from western USA and Canada. It is not easy to distinguish unknown specimen from closely related tardigrade species because they have very limited morphological differences. Samples from both Virginia and Georgia were compared to each *Diploechiniscus* species to determine their identity. Differences included the presence of filaments instead of spines in *D. horningi*. *D. oihonnae* normally have spines which is used to distinguish them from *D. horningi*. Morphological, morphometric, and molecular data were analyzed, reading to the conclusion that unknown specimens from Georgia and Virginia were *D. horningi* species. This expands the Eastern United States. DNA was obtained for *Diploechiniscus horningi*. Unfortunately, there are as of yet no DNA data from *Diploechiniscus horningi* from western North America.

## ***Exploring the Effects of Nanoparticles on Voltage-Gated Ion Channels***

\*Session 1 – Shadows Room

Presenter: [Ariel Hall](#)

Area of Study: Biophysics

Advisor/Co-Author: Dr. Armin Kargol, Anne-Marie Murat, William K. Baggett

School: Loyola University New Orleans

Abstract:

Voltage-gated ion channels are largely responsible for the transport of various ions, such as sodium, calcium, and potassium, across the cell membrane. These ions consequently cause changes in the potential of the cell, stimulating other processes like the firing of neurons or contraction of muscle cells. To facilitate easier transport of these ions, nanoparticles have been suggested as possible transport mechanisms for various medications. In this study, the properties of voltage-gated ion channels in the cell membranes of HEKA cells were studied as relating to the use of added nanoparticles. Polarized and non-polarized nanoparticles were added in several concentrations to cell cultures, which were incubated for twenty-four hours. Cells were then studied using patch clamping on an automatic rig. Cells were exposed to two protocols (IV and Tails), during which the cell membranes were depolarized and then repolarized by applying appropriate voltage across the cell membrane. The current and voltage through the cell membrane was monitored and recorded for each cell. After analyzing the data collected through MATLAB, graphs of current vs. voltage for control cell groups not exposed to nanoparticles and groups of cells exposed to different concentrations of nanoparticles revealed that nanoparticles do not negatively affect the current passing through ion channels. Further research is required to ensure that the nanoparticles are in fact harmless to ion channels. Altogether, this allows nanoparticles to be considered as a possible transport mechanism for various compounds in medications, allowing medicines to work more efficiently in the body.

## ***Family Domestic Violence***

\*Session 2 – Shadows Room

Presenter: [Precious Phillips](#)

Area of Study: Family and Consumer Science

Advisor/Co-Author: Dr. Sun-A Lee

School: University of Louisiana at Lafayette

Abstract:

Domestic violence affects the lives of many Americans. It is estimated that between 4.5 million and 15 million children are exposed to physical violence (O'Donnell & Quarshie, 2019). Adverse childhood experiences have been linked to poor behavioral outcomes of adults (Feroz, Jami, & Massod, 2015). It is important to follow children through childhood, but adulthood is crucial also. Even though lots of studies have been conducted to examine the impact of family violence on children, not many studies have conducted research for understanding the long-term impact of family violence on adults later. Based on Albert Bandura's social learning theory, behaviors are learned. As children are exposed to events in the community and at home, they model what they learn from those around them. "Not only does the family expose individuals to violence and techniques of violence, the family teaches approval for the use of violence (Mihalic & Elliott, 1997). In the current study, the long-term effect of domestic violence in childhood will be

measured by using undergraduate students at University of Louisiana, Lafayette. First, I will examine the correlation between domestic violence in childhood and their current dating violence tendency. In addition, I will examine how the experience of domestic violence in childhood is related to their academic achievement and their psychosocial status, such as depressive symptoms. At the conference, I will present the topic of the current study, literature review of the topic, plan of conducting the study, and expected results.

***First Mover Advantage at the Australian Football League: A 2010-2019 Trend Analysis***

\*Session 2 – Shadows Room

Presenter: Landon Thibodeaux

Area of Study: Kinesiology

Advisor/Co-Author: Dr. Peter Omondi-Ochieng

School: University of Louisiana at Lafayette

Abstract:

The goal of this presentation is to evaluate the effects of first mover advantage (FMA) as a source of competitive advantage (CA) in the Australian Football League (AFL) from the 2010 to 2019 seasons.

***Fundamentals of Cybersecurity***

\*Session 2 – Pelican Room

Presenter: Kerwan Antoine

Area of Study: Computer Science

Advisor/Co-Author: Yenumula Reddy, Niana Celestine

School: Grambling State University

Abstract:

This ongoing research-to-practice initiative proposes an approach to cybersecurity education that addresses the cybersecurity skills shortage. Training high school instructors to teach cybersecurity concepts and integrate them into their classrooms is one way to ensure a larger pipeline to the cybersecurity career path. The proposed approach will result in developing a fundamental curriculum and scalable program in the area of cybersecurity to provide students an engaging learning experience in cybersecurity education and the tools needed to expand their practical skill sets. This project focuses on the basics of hacking in a Kali Linux environment, the ethical topics of hacking and the need for cybersecurity, an introduction to penetration testing and vulnerability assessment, cryptography, and other fundamental concepts. Future work will stem from the baseline activities and assessments and will improve upon the implementation of the material outlined in this curriculum.

### ***Gas Chromatography Mass Spectrometry Carrier Gas Operation Costs: Going down like the Hindenburg***

\*Session 1 – Shadows Room

Presenter: Matthew Crawford

Area of Study: Chemical Engineering

Advisor/Co-Author: William Holmes

School: University of Louisiana at Lafayette

Abstract:

Helium as a resource is finite, and cannot be synthesized, with most of the helium used today extracted as a byproduct during Liquid Natural Gas production. While the US is the world's leader in helium production and reserves, most proven helium reserves are outside of the US, and often in unstable regions. Given the consistently rising costs of helium prices, many laboratories have been searching for an alternative option for use in GC/MS applications. Hydrogen, given its low cost, has been an attractive alternative. To investigate whether hydrogen is a viable substitute for helium, several known target compounds' electron impact (EI) spectra were compared when using hydrogen as the carrier gas against the compounds' spectra when using helium as the carrier gas. Through the analysis of the spectra's quality and response, it could be determined whether the swap to hydrogen is feasible for sensitive operations, since substantial loss in quality would outweigh any potential savings in carrier gas costs. While the background noise of the spectra did increase somewhat, it did not increase to a problematic degree. An added bonus in favor of hydrogen is its lower viscosity compared to helium, leading to faster elution times for peaks in the chromatogram. These faster elution times reduces analysis time and increase laboratory efficiency. The benefits of hydrogen without significant downsides indicate that hydrogen is indeed a viable alternative for use in GC/MS analysis.

### ***Gender as a Moderator for the Association of Job Satisfaction and Physical Symptoms in Direct Support Professionals***

\*Session 1 – Pelican Room

Presenter: Callie Pitre, Nick Barker, Mikaila Kinsland

Area of Study: Psychology

Advisor/Co-Author: Dr. Hung Chu Lin

School: University of Louisiana at Lafayette

Abstract:

The information on the relation between general job satisfaction and physical symptoms in direct service professionals (DSPs) has been limited in the literature. This study examined the relation between general job satisfaction and physical symptoms and how gender moderated this relation. A sample of 133 DSPs were recruited from the Pinecrest Supports and Services Center (PSSC) in Pineville, Louisiana. Participants responded to a survey including the Somatization Scale of the Symptom Checklist-90- Revised, assessing 12 somatic symptoms, and the Minnesota Satisfaction Questionnaire-Short Form, assessing an employee's satisfaction with job. The results indicated a moderating effect of gender, with only females showing a significant relation between job satisfaction and physical symptoms. Understanding the

differences in the experience of somatic symptoms as it relates to job satisfaction is necessary in creating better working environments for all individuals.

***General Self-Efficacy (GSE) Interacts with Difficulty in Emotion Regulation (DERS) Predicting Depressive Symptoms (from DASS)***

\*Session 1 – Pelican Room

Presenter: Maddison Knott, Meghan Broussard, Victoria Morck

Area of Study: Psychology

Advisor/Co-Author: Hung-Chu Lin

School: University of Louisiana at Lafayette

Abstract:

Previous research has found that Direct Support Professionals (DSPs) have reported feelings of being overworked, lacking sufficient training, and experiencing burnout. The purpose of this study was to examine the moderating role of difficulty in emotion regulation between general self-efficacy (GSE) and depressive symptoms. A sample of 133 DSPs responded to a self-report measure that included demographic information, a general self-efficacy scale, a difficulty in emotion regulation scale (DERS), and a depression, anxiety, and stress scale. Results indicated that there was a negative correlation between GSE and depressive symptoms but that DERS strengthened the relation between the two variables. The moderating role of DERS showed that when difficulty in emotion regulation was high, the association between GSE and depressive symptoms was strong. However, for those individuals who reported low levels of difficulty in emotion regulation, their GSE scores did not significantly predict depressive symptoms. These findings suggest that targeting emotion regulation and self-efficacy may help improve the mental well-being of DSPs who encounter highly stressful situations on a daily basis.

***General Self-efficacy Predicting Anxiety Symptoms through Stress in Direct Support Professionals***

\*Session 1 – Pelican Room

Presenter: Madison Holmes, Madalynn Bourque

Area of Study: Psychology

Advisor/Co-Author: Hung-chu Lin, Sarah Flynn

School: University of Louisiana at Lafayette

Abstract:

Self-efficacy is a person's belief in the ability to effectively handle challenging situations. This study examined how general self-efficacy (GSE) and anxiety symptoms were related and the mediation of stress on this relation in the context of direct support professionals (DSPs). The job of DSPs is to provide care for individuals with disabilities, which can be demanding and stressful. This study included 133 (103 females, 30 males) DSPs who completed multiple self-report measures, including the General Self-Efficacy Scale and the Depression Anxiety and Stress Scale for the assessment of general self-efficacy, anxiety symptoms, and stress, respectively. Regression analysis was applied to examine the mediating role of stress in the association between GSE and anxiety symptoms. The results indicated that GSE negatively

predicted anxiety symptoms, and that stress mediated this prediction. The findings suggested that direct support professionals with high general self-efficacy experienced less stress, thus exhibited less anxiety symptoms. Fostering a sense of self-efficacy and properly managing perceived stress would improve well-being in DSPs and ultimately for the individuals in their care.

### ***Genetic Diversity of Claxtonia maucci***

\*Session 1 – Magnolia Room

Presenter: Rajan KC

Area of Study: Biology

Advisor/Co-Author: Kathy Jackson, Harry Meyer

School: McNeese State University

Abstract:

Tardigrades are microscopic animals that are found in both terrestrial and aquatic environments. Early research on tardigrades relied on morphological characteristics to identify tardigrade species. Due to similarities in morphology, some species were misidentified and/or placed in the incorrect genus. Recently researchers have been actively revising the list of tardigrade species within genera. Based on this work, the tardigrade *Claxtonia maucci* has recently been moved from the genus *Echiniscus*. This change in genus was made based on the morphological characteristic of dorsal plate sculpturing. Tardigrades can be identified most accurately by using a combination of morphological and genetic data. DNA barcoding has been used for decades to sequence highly conserved regions of DNA that can be used for species identification in multiple animals. Tardigrade DNA is now being analyzed by DNA barcoding as a second method of species identification. For this study, we sequenced the COI and 28S genes of *Claxtonia maucci* to determine genetic variation within the species. These sequences were also compared to members of the genus *Echiniscus* and other members of the genus *Claxtonia* to determine whether genetic data validates the movement of *Claxtonia maucci* to its new genus.

### ***Genetic Diversity of Minibiotus fallax***

\*Session 1 – Magnolia Room

Presenter: Jordan Bonza

Area of Study: Molecular Biology

Advisor/Co-Author: Kathy Jackson, Harry Meyer

School: McNeese State University

Abstract:

Tardigrades are microscopic animals found in diverse environments. Morphological characteristics have been the primary method for identification of tardigrade species. This method of tardigrade identification has led to misidentified animals and resulted in animals being placed in incorrect genera due to morphological similarities between species. Because of this, researchers are often amending the list of tardigrade species within genera. The most accurate way to identify a tardigrade is with the use of both morphological and DNA data. DNA barcoding is now being used to sequence highly conserved regions of tardigrade DNA for species identification. Recently, our collaborators have been interested in a re-description of

the Minibiotus and Macrobiotus genera. Some species such as Macrobiotus acadianus have already been move from Minibiotus into the Macrobiotus genus. The original work describing morphological characteristics of Minibiotus fallax used animals that were found in Australia, but genetic data was not collected in that study. We have recently identified Minibiotus fallax in samples collected from Florida. For this study, we sequenced multiple highly conserved genes from Minibiotus fallax. Genetic diversity within the species was determined. In addition, DNA sequences from Minibiotus fallax were compared to other members of Minibiotus as well as species from the Macrobiotus genus to examine whether Minibiotus fallax is in the correct genus.

### ***Hydroxyproline Analysis in Freshwater Fish Skin of the Bayou Region***

\*Session 2 – Magnolia Room

Presenter: Savannah Sadaippen

Area of Study: Biomedical Innovation and Immunology

Advisor/Co-Author: Mallory Robichaux, Sarah Soorya, Rajkumar Nathaniel

School: Nicholls State University

Abstract:

Collagen is a major fibrous protein found in the extracellular matrix of cells and in connective tissue. Collagen molecules consist of a triple helix structure made up of the three amino acids: glycine, proline, and hydroxyproline. Hydroxyproline is abundant in collagen. The triple helix connects to form a complex collagen network that provides strength and structure. Collagen networks are abundant in connective tissues whose primary function is to aid in new skin cell growth. Analyzing the hydroxyproline content of an area of connective tissue can help quantify how much collagen is present. In the present work, we investigated hydroxyproline content in three different sectional areas of skin belonging to *Lepomis auritus* (Redbreast Sunfish), *Lepomis macrochirus* (Bluegill), *Aplodinotus grunniens* (Freshwater Drum), and *Pylodictis olivaris* (Flathead Catfish), all of which are freshwater species in the Bayou region. The hydroxyproline content of each area is used to quantify the amount of collagen aiming to find areas with the highest collagen content. Fish skin was homogenized and lysates were subjected to acid hydrolysis. The hydroxyproline content was then analyzed colorimetrically and compared to a standard curve. Present data indicates the abdomen of the *Pylodictis olivaris* contains the highest hydroxyproline content suggesting this area will have high levels of collagen. This is the first such report on skin biochemistry for these species.

### ***Identification of Endolithic Cells During Exploration of Rhodoliths' Endolithic Microenvironment***

\*Session 1 – Magnolia Room

Presenter: Samantha Ritter, Sarah Bush

Area of Study: Biology

Advisor/Co-Author: Dr. Sherry Kravesky-Self, William Schmidt, Suzanne Fredericq

School: University of Louisiana at Lafayette

Abstract:

Within rhodolith-forming crustose coralline algae we find ample endolithic eukaryotic life. Neither the extent of endolithic diversity, nor the scope of the endolithic microenvironment (ELME) is

well understood. We continue to culture and describe such endolithic cells and compare them to cells previously identified by our group. We are employing new equipment and are becoming more efficient at establishing cultures and at identifying endolithic cells.

***Identifying Spiders Through PCR Analysis Using the Mitochondrial Cytochrome C Oxidase I Gene and the 16S Ribosomal RNA Gene***

\*Session 1 – Magnolia Room

Presenter: Chloe Dupleix

Area of Study: Biology

Advisor/Co-Author: Dr. Aimee K. Thomas, Ph.D. & Dr. Patricia L. Dorn, Ph.D.

School: Loyola University New Orleans

Abstract:

DNA barcoding is a taxonomic method used to identify and distinguish animal species by the sequence of a 650 base pair segment of the cytochrome c oxidase (COI) gene and sometimes the 16S rRNA gene. Both genes are found in mitochondrial DNA, and the sequence obtained is most useful at the subspecies level. DNA barcoding is important and useful when identifying spider species because spiders can be small and thus difficult to categorize, and the primary technique for spider identification is through morphological distinction of the genitalia of sexually mature spiders thus making the identification problematic for juveniles. We studied 50 juvenile and sexually mature spiders in the family Lycosidae to generate identifying barcodes for these spiders. We used five different primer sets in three different combinations to amplify the COI gene and the 16S rRNA gene. The primer sets were 16Sa & 16Sb, LCO 1490 & HCO 700ME, and LCO 1490 & HCO 2198. These combinations were selected because of their ability to successfully amplify spider DNA according to published literature. Barcodes that successfully distinguish Lycosidae species will be presented.

***Impaired Anabolic Response Leads to Decreased Muscle Protein Synthesis in Colon Cancer Mice***

\*Session 2 – Shadows Room

Presenter: Emily Walker

Area of Study: Kinesiology

Advisor/Co-Author: Dr. Shuichi Sato, Richard Yongue

School: University of Louisiana at Lafayette

Abstract:

Functional overload is the use of a stimulus, such as gravity, to help increase muscle mass, but few studies have researched its effect in the animal model of muscle wasting due to cancer (cancer cachexia). **PURPOSE:** The purpose of this study was to research the response of the plantaris muscle to a 7-day functional overload in colon cancer mice. **METHODS:** Synergist ablation surgery was performed on 18-week-old healthy (WT) and cancer (Min) mice by removing the gastrocnemius and soleus muscles from the left leg, leaving the right leg as a control. Puromycin was injected 30 minutes before sacrifice and plantaris muscles were harvested seven days after the surgery. The muscles were homogenized, the total protein concentration was measured by Bradford assay, and western blotting was performed. Statistical analysis included paired t-test (control vs overloaded muscle) and unpaired t-test (WT vs Min).

RESULTS: Min mice lost approximately 10% of body weight compared to peak body weight and the plantaris weight of Min mice was 19% smaller than WT mice. 7-day functional overload increased plantaris weights in both mice, but the amount of muscle hypertrophy in Min mice was less than WT mice. Western blot analysis demonstrated that Min mice had reduced p70S6K activation after 7-day functional overload compared to WT mice. The levels of phosphorylated and total 4EBP1 increased in WT while no change was detected in Min mice. In line with the data observed in mTOR signaling, the response to functional overload in muscle protein synthesis (MPS) was reduced in Min mice. CONCLUSION: Results indicate that colon cancer mice need assistance in order to increase their anabolic response to the stimulus.

### ***Improved Access to Heterocyclic Tellurium Compounds and Their Supramolecular Self-Assembly***

\*Session 2 – Magnolia Room

Presenter: Dallas N. Alexis

Area of Study: Chemistry

Advisor/Co-Author: Thomas Junk, Frank R. Froczek

School: University of Louisiana at Lafayette

Abstract:

The self-assembly of supramolecular frameworks from organic compounds containing the rare element tellurium has seen considerable interest in the recent past. Notably, heterocyclic compounds including 1,3-tellurazoles, 2,5-telluradiazoles and 1,2-tellurazole-N-oxides are known to be capable of forming chains, ribbons and rings of interest in the design of nanostructured materials suitable a molecular wires and as novel ligands. The synthesis of such compounds is challenging, however. Several substituted benzo-1,3-tellurazoles were prepared, followed by the preparation of previously unknown 10H-pyrazino[2,3-b][1,4]benzotellurazines. Synthetic pathways leading to these compounds are discussed. The products were characterized by X-ray crystallography, and their ability to undergo supramolecular self-assembly was determined. Two modes of self-assembly were encountered. In the absence of secondary amine moiety capable of hydrogen bonding, the formation of ribbons was dominates. Thus, an OPRTEP plot of the structure of 2-phenylamino-1,3-benzotellurazole indicates the formation of a ribbon structure in which each tellurium atom coordinates to the nitrogen atom of the adjacent molecule. In contrast, the formation of hydrogen bonded dimers was observed for 2-phenylaminobenzo-1,3-tellurazoles and 10H-pyrazino[2,3-b][1,4]benzotellurazines.

### ***Internet Shopping Intention Among College Students***

\*Session 2 – Shadows Room

Presenter: Raegan Perry

Area of Study: Family and Consumer Science

Advisor/Co-Author: Jung-Im Seo

School: Southern University and A&M College

Abstract:

The internet is one of the most popular market formats to college students. Tremendous growth of internet shoppers in the recent years urges to research on a subject of the internet shopping intention related to the clothing involvement and product attributes. The purposes of this study

were to explore the two factors in product attributes, style and brand attributes, impacting on the online purchasing intention among the college students. Convenience sampling method was used to recruit the responses of 240 completed surveys. The data were analyzed to explain the unique internet shopping intention among college students using structure equation modeling (SEM). The path coefficient in SEM was made to test the hypotheses. This study revealed that the clothing involvement was one of strong determinant factors in style and brand attributes, ultimately affecting the internet shopping intention. That is, both factors of style and brand attributes greatly impact on the internet shopping intention. Especially, many college students show strong clothing concerns, associated with the factor of brand attributes before purchase decision. When college students were looking for their clothing through the internet, they first recognized the famous brand names or the well-known brand products. Interestingly, however, when they made a decision through online purchase, the style attributes more strongly impacted on the online shopping intention rather than the brand attributes.

***Investigating the effects of silicate concentrations on growth of *Skeletonema costatum* in a defined media***

\*Session 2 – Pelican Room

Presenter: Sidney Williams

Area of Study: Environmental Science

Advisor/Co-Author: Philip Bucolo

School: Loyola University New Orleans

Abstract:

The Pontchartrain Basin Estuary in Southeastern Louisiana is an extensive watershed driving productivity and biodiversity of the area. The organisms found within Lake Pontchartrain Basin are exposed to changing nutrient regimes and subsequent ionic changes associated with the hydrology of the water shed. Nutrient rich media has long been deployed for lab based algal culture experiments. However, nutrient rich media does not reflect the nutrient regimes and ionic proportions as they are in nature. To accurately understand algal responses in culture experiments, the media should emulate the environment in question. Lake Pontchartrain Media (LPM) was formulated from long term water quality sampling of the Lake Pontchartrain Basin in hopes to be employed for culture experiments on local diatoms as an alternative to using typical f/2 nutrient rich media. However, the original recipe of LPM did not include silicate, a limiting nutrient for diatom growth. Three different concentrations of silicate were added to the LPM recipe, and population growth of diatom *Skeletonema costatum* was quantified over a span of 9 days to illustrate population changes. It was hypothesized that employing LPM with the addition of silicate in concentrations identical to those found in universally employed f/2 media would lead to optimal population growth while emulating the natural system. Diatom populations grew in LPM media with all silicate concentration treatments, but growth was significantly greater statistically in the most abundant concentration, those identical to f/2 silica regimes. A second round of experiments comparing LPM with different silica concentrations to f/2 will commence shortly. However, preliminary conclusions confirm that LPM is a viable media recipe for algal culture experiments associated with Lake Pontchartrain microbial community and adequate for diatom investigations with the addition of silica.

### ***Is crab shell a repository for the divalent heavy metal cadmium?***

\*Session 2 – Shadows Room

Presenter: Brenna Butler

Area of Study: Endocrinology and Physiology

Advisor/Co-Author: Enmin Zou

School: Nicholls State University

Abstract:

The post-ecdysial mineralization in crustaceans involves deposition of carbonate salts, such as calcium carbonate, to the organic matrix in the new exoskeleton. Cadmium is a toxic, non-essential metal frequently found in tissues of aquatic crustaceans. In spite of the similarity between cadmium and calcium ions, no study has been carried out to investigate whether the exoskeleton is a repository of cadmium. This project seeks to determine whether cadmium is incorporated into the new shell during the post-ecdysial mineralization using the blue crab, *Callinectes sapidus* as the model crustacean. It is hypothesized that the injected cadmium would be deposited into the shell by calcium transporters in the epidermis during the mineralization process because of the resemblance between cadmium and calcium ions. Post-ecdysial blue crabs will be injected with cadmium chloride, and cadmium content and calcium in the exoskeleton and cadmium content in the hepatopancreas, blood, gills and muscles will be analyzed. Since the presence of cadmium may also impact the formation of the shell in multiple ways, such as alterations in composition of exoskeletal inorganics and changes in the integrity of the organic matrix, the mechanical strength of the crab exoskeleton will also be analyzed. If the hypothesis is proven true, the finding will not only constitute a seminal contribution to aquatic toxicology but also signify that cadmium in crustacean exoskeleton can be used as a biomarker for aquatic cadmium pollution.

### ***Juror's Sense of Entitlement as a Predictor of Monetary Awards Given in Personal Injury Cases***

\*Session 1 – Pelican Room

Presenter: Sarah Smith

Area of Study: Psychology

Advisor/Co-Author: Dr. Valanne MacGyvers, Abbey M. Warren

School: University of Louisiana at Lafayette

Abstract:

Jury selection is a very important part of criminal law proceedings. It is important to study the personality characteristics of potential jurors to help determine who would be the best juror to have on a specific case to ensure the best possible outcomes. The purpose of this study is to expand on an already existing body of literature regarding how certain personality characteristics affect potential juror candidates' decision-making processes. There is already evidence supporting that the more entitled a person is, the more money they are willing to award so this study is expanding on an already existing study to see if racial biases will also have an effect as well as political orientation.

### ***Keep Your Wishes Close***

\*Session 1 – Pelican Room

Presenter: Brynne Babin

Area of Study: Psychology/Cognition and Perception

Advisor/Co-Author: Dr. Don Zhang, Gloria Foret

School: Louisiana State University

Abstract:

This study examined how visceral needs, specifically thirst, affect the distance perception of a desired object (Balcetis et al., 2010). First, using z-curve analysis, we re-examined the results of Balcetis' findings. Z-curve analysis revealed that the estimated discovery rate of the study was 6% , which suggests a lack of significant results due to small sample size. Next, we meta-analyzed results from eleven pre-registered replications based on Study 1 in Balcetis et al., (2010) conducted as part of a class project over the course of two academic semesters (Total N = 623). Across these replications, LSU student participants were asked to either drink water until their thirst was satisfied or eat five salted pretzels. After eating or drinking, participants were made to rate their subsequent thirst level and desirability of a water bottle placed 36 inches away from them. Participants then gave their best estimate of the water bottle's distance from them in inches. The meta-analytic effect of thirst on distance perception was  $Z = 0.149$  [95% CI: -0.202, 0.235]. The results suggest that there was no significant effect found. The original findings reported by Balcetis et al., (2010), therefore, were not replicated.

### ***Life satisfaction of churchgoers: The role of sense of community***

\*Session 1 – Pelican Room

Presenter: Wade Johnson

Area of Study: Psychology

Advisor/Co-Author: Dr. Manyu Li

School: University of Louisiana at Lafayette

Abstract:

This research studied two relationships, one being the relationship between church membership and life satisfaction with sense of community mediating, and the other being religiosity and life satisfaction with sense of community mediating. Previous research has shown that religiosity is related to an increased sense of life satisfaction (Peacock & Poloma, 1998), but it is still not clear what aspects of religion give people this increase in satisfaction or happiness. While there may be many factors that could result in this belief, this study focuses on the role of sense of community among believers. Responses from Wave 6 of the World Values Survey United States Region (N = 2232) provided the data for this study. Participants were asked to identify how frequently they attended church, in the form of non- active (0), and active (1). Subjects were also asked to rate how they perceived themselves within their community and their overall life satisfaction. Mediation analyses were then run to determine the relationship between the two sets of variables. Results indicated that individuals who attended church actively, as well as those who identified as religious were found to have greater life satisfaction, mediated by perceived sense of community.

### ***Ligand Synthesis for Atom Transfer Radical Polymerization***

\*Session 2 – Magnolia Room

Presenter: Mary Nguyen

Area of Study: Chemistry

Advisor/Co-Author: Dr. Yu Wang

School: University of Louisiana at Lafayette

Abstract:

Atom transfer radical polymerization (ATRP) is one of the most widely used techniques in polymer material design. In an ATRP process, the dormant polymer chains are activated by the Cu(I) complex to generate radicals and the Cu(I) complex is oxidized to a higher oxidation state, i.e., Cu(II), by a one electron transfer process. This reversible process rapidly establishes an equilibrium that is predominately shifted to the dormant side with a very low level of radical concentration. The number of polymer chains is determined by the number of initiators. Each growing chain has the same probability to propagate with monomers to form living polymer chains. As a result, polymers with similar molecular weight could be prepared. The ligands used for the Cu complex is an important component in ATRP. The structures of the ligands could change the activity of the Cu catalyst dramatically. In this study, two pyridine-based ligands were synthesized. Their application in ATRP was illustrated.

### ***Lithium, Copper, Silver, and Gold: The Effects of Substituting Monovalent Metals in $CZn_4M_4$ Clusters on the Geometry of Carbon***

\*Session 2 – Magnolia Room

Presenter: Andrew Coe

Area of Study: Chemistry

Advisor/Co-Author: Kiran Boggavarapu, Phoenix Sconzert-Hall

School: McNeese State University

Abstract:

Chemists have found excitement in developing novel systems which exhibit tetracoordinate carbon in unusual (not tetrahedral) geometries. Recent studies in our group have shown a correlation between magic number total electron counts and the geometry of carbon in small carbon-metal clusters. This study expands on these observations by examining the role of different metal species on the structure of carbon-metal clusters  $CZn_4M_4$  where  $M = Li, Cu, Ag,$  and  $Au$  which possess 16 total valence electrons (a 2D magic number). Global minimum searches using genetic algorithms show a fine-tuning for local carbon geometries with the selection of metal; ranging from true tetrahedral, to pseudo planar, to octahedral. Global minimum structures were refined using advanced DFT methods to assess stability and bonding. Preliminary results indicate localized carbon geometries are influenced by metal atom electron density and carbon-metal orbital interactions.

### ***Loss and Well-Being in Natural Disaster Victims***

\*Session 1 – Pelican Room

Presenter: Alexandra Nordman

Area of Study: Psychology

Advisor/Co-Author: Dr. Wozencraft

School: University of Louisiana at Lafayette

Abstract:

A sample of Gulf State natural disaster victims from the general community was taken from Louisiana and Texas residents. A total of 158 participated in reporting loss with a total of 106 reporting well-being. Loss scores were constructed based upon the stress points assigned to Holmes and Rahe Social Readjustment Scale items. Loss scores for disaster victims ranged from a low of 11 to a high of 130. The low quartile had scores less than or equal to 25, with the highest quartile having scores greater than or equal to 76. The WHO-5 survey on well-being was used to calculate current well-being as well as well-being 4-6 months following the reported natural disaster. As predicted, peri-disaster WB scores were lower than current WB scores ( =14.8 versus =17.2) Those in the top quartile and bottom quartile on loss are predicted to be different in well-being scores, with more significant differences for peri-disaster well-being scores than for current well-being scores. Implications for improving well-being in future disasters will be discussed, particularly in reference to level of loss experienced.

### ***Monitoring Levels of Fecal Indicator Bacteria in Water Bodies Impacted by Aerobic Sewer System Effluent***

\*Session 1 – Magnolia Room

Presenter: Bethanie Farber

Area of Study: Microbiology

Advisor/Co-Author: Chris Struchtemeyer

School: McNeese State University

Abstract:

Aerobic sewer systems are used to treat wastewater in many rural areas of the United States. Many of these systems discharge effluent directly into ditches and ravines that rely on sunlight for disinfection purposes. This practice is problematic since very few studies have examined whether effluent from aerobic sewer systems is adequately disinfected by sunlight. In many cases, the disposal ditches or ravines that receive effluent from aerobic sewer systems flow directly into or near major recreational water bodies. The goal of this work was to assess the environmental impacts of aerobic sewer system effluent by monitoring the microbial quality of water from: 1) Ditches and ravines where aerobic sewer system effluent gets discharged and 2) The Calcasieu River, which intersects with several ditches and ravines that collect aerobic sewer system effluent. The microbial quality of ditch, ravine, and river samples was evaluated by monitoring concentrations of *Escherichia coli* and fecal coliform bacteria. The results of this work showed that *E. coli* and fecal coliforms were present at levels of up to  $1.2 \times 10^5$  cfu/100 ml and greater than  $3.0 \times 10^6$  cfu/100 ml, respectively in ditches and ravines where aerobic sewer system effluent was disposed. *E. coli* and fecal coliform bacteria were typically undetectable in the Calcasieu River during periods of dry weather, but were present at levels of up to  $9.5 \times 10^3$  cfu/100 ml and  $8.8 \times 10^4$  cfu/100 ml, respectively following rain events. These results show that

fecal indicator bacteria from aerobic sewer systems persist in disposal ditches and ravines and are then flushed into the Calcasieu River during rain events. These observations represent a significant public health concern since the Calcasieu River is used for a variety of recreational activities including fishing, boating, jet skiing, and swimming.

### ***Monitoring the Prevalence of Methicillin Resistant Staphylococcus aureus on Common Surfaces in a University Biology Building***

\*Session 1 – Magnolia Room

Presenter: Michael Hebert

Area of Study: Microbiology

Advisor/Co-Author: Chris Struchtemeyer

School: McNeese State University

Abstract:

Hospital-acquired methicillin resistant *Staphylococcus aureus* (HA-MRSA) has been a major cause of nosocomial infection since its discovery in the 1961. However, more recently there has been an alarming increase in the number of infections caused by community-acquired methicillin resistant *Staphylococcus aureus* (CA-MRSA) in otherwise healthy individuals outside of healthcare settings. The aim of this study was to monitor the prevalence of MRSA on common surfaces in a university biology building. With the daily influx of people into classrooms and bathrooms, university buildings represent a potentially significant source of MRSA. Over 100 samples were taken from desks, door handles and bathroom surfaces throughout the building using sterile cotton swabs that were moistened in a sterile 0.9% saline solution. The swabs were subsequently plated on CHROMagar MRSA medium and incubated for 48 hours. Plates that produced pinkish-purple colonies were read as a positive. MRSA was isolated from 83% of the samples taken from bathroom surfaces including paper towel dispensers, urinal flush valves, and toilet seats. Of the 93 desks swabbed from high traffic classrooms, 42 produced a positive for MRSA. Approximately 50% of the swab samples collected from door handles contained MRSA isolates. The results of this study demonstrate that MRSA is frequently present on everyday surfaces that students come in contact with. Thus, these surfaces could potentially represent a significant source of possible MRSA infections. This study highlights the need for improved cleaning practices throughout university campuses and enforces the necessity of handwashing and proper hygiene.

### ***Net-Energy Generation Savings of a Photovoltaic Power Plant after One Year of Operation***

\*Session 1 – Shadows Room

Presenter: Duncan Royster, Lelia Deville, Savannah Thomas

Area of Study: Mechanical Engineering

Advisor/Co-Author: Dr. Terrance Chambers, Deepak Jain Veerendra Kumar

School: University of Louisiana at Lafayette

Abstract:

The University of Louisiana at Lafayette's Photovoltaic Applied Research and Testing (PART) Lab's PV power-plant began producing energy on June 30, 2018. After over a year of operation, the system was evaluated to determine the savings, both in the energy and monetary form. The

energy produced by the system was compared to the energy consumed by the university to determine the frequency and magnitude of over-production. Using the university's power bill, this comparison was used to determine the monetary savings of the university from the plant. To improve future university installations, the three different types of panels used, monocrystalline, polycrystalline, and thin-film, were also evaluated to determine which panel was the most efficient in the given conditions over the course of the year. Other performance parameters were also evaluated.

### ***Nouvelle Acadie and Settler Reuse of Native American Mounds as Cemeteries***

\*Session 2 – Shadows Room

Presenter: Regina Lowe, Noelle Latiolais

Area of Study: Anthropology

Advisor/Co-Author: Dr. Mark Rees, Miranda Davis

School: University of Louisiana at Lafayette

Abstract:

Nouvelle Acadie represents the original homesites and gravesites of Acadian exiles who settled in South Louisiana in 1765. More than 200 Acadians arrived at Fausse Point and 39 died from epidemic disease within months. Twenty-one burials are associated with three family homesites on the Teche Ridge. Archaeological survey has revealed historic sites on lands owned by Acadians and non-Acadian French, as well as two abandoned family graveyards and several locations said to have unmarked graves. One of these is a Native American earthen mound site. We examine the hypothesis that settlers reused earthen mounds as cemeteries.

### ***Nutrition and Wellness Intervention: The Young Chefs Club***

\*Session 2 – Pelican Room

Presenter: Kyra Anderson

Area of Study: Human Nutrition and Food

Advisor/Co-Author: Dr. Bernestine McGee, Lauren Collins, Glenda Johnson

School: Southern University and A & M College

Abstract:

It is generally agreed that the nation is facing a childhood obesity crisis. Establishing a healthy lifestyle (diet and exercise) early in a child's development could be an important strategy in preventing this serious health issue. For three consecutive years, 2017-2019, Southern University and A&M College Dietetic Interns lead The Young Chefs Club Intervention. The objectives were for the participants to improve in their consumption of healthy foods and learn basic cooking skills. The intervention consisted of twelve weeks of interactive nutrition lessons and cooking activities. A total of 30 middle-school students attending The Big Buddy Afterschool program, a nonprofit organization in Baton Rouge, Louisiana were participants. Changes in nutrition knowledge and eating behaviors were assessed using a pre-and post-survey. The survey instrument consisted of eight items designed to measure the confidence related to preparing and consuming fruits and vegetables. Response options ranged from 1 ("Very Unsure I Can") to 6 ("Very Sure I Can"). A post-only questionnaire (Cooking Skills) was used to assess participants' food preparation skills. Findings for years 2017 and 2018 are presented. Prior to the intervention, 95.2% (n=20) of those participants indicated some degree of "unsureness" in

their confidence in preparing and consuming fruits and vegetables. Post intervention, 66.7 % (n=14) of the participants indicated some level of “unsureness.” Participants in all three years (2017-19) specified a range of experience in performing basic cooking skills. Confidence in using sharp knives safely, a stove top burner and measuring cups and spoons were 37.1% (n=11), 31.6 % (n=10) and 33.6% (n=10) respectively. Results suggest that including cooking activities in teaching nutrition can be effective in improving knowledge and healthy eating behaviors of youth. A six-month post-intervention assessment is recommended for future research.

### ***Oil Spills and Pollution***

\*Session 2 – Magnolia Room

Presenter: Sabriah Haq, Savannah Plaisance

Area of Study: Chemistry

Advisor/Co-Author: Dr. Febee Louka

School: University of Louisiana at Lafayette

Abstract:

Despite the efforts of mankind to make our planet cleaner, the use of oil is still very important today. Unfortunately, the most used energy of the world causes many issues, which are very difficult to fix most of the time. Oil spills are one of the most dangerous for the environment, and one of the harder to fix. In fact, we are not able to discuss fixing this problem, but rather to restrict the effect of the oil on the environment. Because of some economic and technical reasons, the goal will not be necessarily to clean and restore the polluted area just like before the oil spill. Better understanding of petroleum effects on aquatic invertebrates (marine organisms) is important for predicting impacts of oil spills. Such understanding requires insight into effects of polycyclic aromatic hydrocarbons (PAHs) as well as their interactions. Samples were collected from an oil spill polluted site. PAHs were extracted from water samples using Liquid-Liquid extraction using dichloromethane followed by hexane. On the other hand, microwave was used for oil extraction from solid samples using dichloromethane, concentrated in hexane to 1 mL of hexane. The extracts were analyzed using gas chromatography with flame ionization detector. All samples were found to be contaminated with high levels of oil spill.

### ***Performance Comparison of RRT and FRRT Algorithms***

\*Session 1 – Shadows Room

Presenter: Joseph Stevens

Area of Study: Mechanical Engineering

Advisor/Co-Author: Dr. Joshua Vaughan, Gerald Eaglin

School: University of Louisiana at Lafayette

Abstract:

This paper provides an analysis of simulations of a flexible system whose path was planned using the Rapidly-Exploring Random Tree (RRT) and Flexible Rapidly-Exploring Random Tree (FRRT) algorithms. RRT is a path planning algorithm developed for high-degree-of-freedom dynamic robots with nonholonomic constraints. However, it has some limitations, namely, generating optimal solutions for robots with kinodynamic constraints and failing to be an asymptotically optimal planner. Other versions of RRT, like RRT\*, are asymptotically optimal but

use the two-point boundary value problem to generate the planner's tree. However, solving the two-point boundary value problem is computationally expensive. Therefore, a new algorithm, FRRT, is proposed that generates optimal solutions without using the two-point boundary value problem. Although more research is required to prove FRRT's optimality, the analysis presented in this paper shows promising results.

### ***Perspective Taking as a Moderator Between Self-Efficacy and Intrinsic Satisfaction in a Sample of Direct Support Professionals***

\*Session 1 – Pelican Room

Presenter: DeAndra Edwards, Hunter Harrington, Lindsey Held

Area of Study: Psychology

Advisor/Co-Author: Hung-Chu Lin,

School: University of Louisiana at Lafayette

Abstract:

Direct support professionals (DSPs) play an essential role in ensuring the well-being and life sustaining measures of people living with developmental disabilities (DDs) and their families. The occupation is often challenging due to a bevy of workforce deficiencies and specific behaviors associated with DDs. Literature is limited in the relation between self-efficacy and general satisfaction in DSPs. The purpose of this study was to analyze the relation between self-efficacy and general satisfaction and how perspective taking functioned as a moderator between them. A sample of 133 DSPs (103 females, 30 males) were recruited from the Pinecrest Support and Services Center (PSSC) and responded to self-report measures that included the General Self-Efficacy Scale (GSE), the Intrinsic Satisfaction, Extrinsic Satisfaction, and General Satisfaction subscales of the Minnesota Satisfaction Questionnaire (MSQ), and the Interpersonal Reactivity Index that included Perspective-Taking, Fantasy, Empathic Concern, and Personal Distress. The results indicated a positive correlation between self-efficacy and intrinsic satisfaction that varied with perspective taking. The findings underscored a moderating role of perspective taking such that as perspective taking increased, the strength of the association between self-efficacy and intrinsic satisfaction increased. However, for individuals that indicated low perspective taking, self-efficacy did not indicate intrinsic satisfaction. The findings have implications for improving intrinsic satisfaction in DSPs by increasing self-efficacy and perspective taking in DSP job-training.

### ***Potential Power-Conflict in the Workplace or at Home***

\*Session 2 – Shadows Room

Presenter: Allison Thomas

Area of Study: Sociology

Advisor/Co-Author: Ashraf Esmail

School: Dillard University

Abstract:

According to Wee, (2017, P. 2375), future research should examine the potential power conflict between the leader and the follower in the home or workplace. The purpose of this presentation is to empirically explore potential power conflict between the leader and the follower in the home and workplace. The research question that will be addressed What is the potential power

conflict between the leader and the follower in the home or workplace? Results will be shared from interviews and focus groups with working adults.

### ***Power Density Dependence of Magnetization of Laser Heated SmCo powder***

\*Session 2 – Magnolia Room

Presenter: Keren-Happuch Muswere

Area of Study: Material Science

Advisor/Co-Author: Haeyeon Yang

School: Grambling State University

Abstract:

SmCo is a rare earth magnet for the applications that require a stable permanent magnet operating at high temperatures. Currently SmCo based magnets are manufactured via the reduction/melt technique that requires high temperature furnace. We have used laser melting approach to produce SmCo alloys, which does not require furnaces. Commercial SmCo powders were heated using a 15 watt semiconducting laser. The sample was placed in between two quartz glass plates to minimize evaporation during the laser heating process. The laser power density was varied by varying the distance between the focusing lens and the sample. The results show that the magnetization increases with the laser energy density and the magnetic properties are comparable to those from the samples obtained from 50 watt laser melting. The coercivity of laser heated samples is much lower than that of pure commercial powder, which may be because of higher level oxidation as laser treatment was performed in air. The results of SmCo laser heated by confining between two quartz glass plates show a promising process to minimize material evaporation.

\* Work supported by the National Science Foundation through cooperative agreement OIA-1541079 and the Louisiana Board of Regents.

### ***Preliminary Analysis on the Energy Consumption of a Metal 3D Printing System***

\*Session 1 – Shadows Room

Presenter: Dustin Tortorich

Area of Study: Engineering

Advisor/Co-Author: Dr. Emre Bahadir, Dr. Ahmad Fayed

School: Southeastern Louisiana University

Abstract:

3D printing is a manufacturing technology that builds up components and assemblies layer by layer based on the digital data provided by 3D virtual models. In the last three decades, the technology has experienced substantial advancements. With the improvements in speed, precision, and especially in material characteristics, 3D printing has become a mainstream manufacturing process in industry. Today, 3D printing technologies are capable of printing parts using stainless steel, titanium, aluminum, ABS, PLA, and many other industrial materials. Although, the 3D printing technology is still behind the traditional mass production methods in terms of precision, surface finish, and speed, it is a feasible alternative when various business strategies such as custom design, low volume production, distributed manufacturing, occupational safety, and sustainability are prioritized. 3D printing technology always has been seen as a sustainable way of manufacturing because of its inherent characteristics such as

wasteless production, custom production, single unit or low volume production, local/distributed production, elimination of supply chains, and its independence from the power grid. However, current body of research is limited in its ability to quantify the environmental impacts of 3D printing technologies because of the lack of a standardized method for sustainability analysis of 3D printing technologies. Moreover, it is recommended that assessments and characterization of energy consumptions should be standardized both for 3D printing and for conventional manufacturing in order to enable accurate comparisons. The focal point of this study is to perform a preliminary analysis on the energy consumption of Atomic Diffusion Additive Manufacturing (ADAM) systems. ADAM is an industrial metal 3D printing process that builds actual metal parts that conform to engineering specifications of desired mechanical, physical, and chemical characteristics. Through this study, preliminary environmental sustainability analysis of ADAM technology will be performed based on its energy consumption.

### ***Quantification of Operational Resiliency in Space Power Systems***

\*Session 1 – Shadows Room

Presenter: Kennedy Lee

Area of Study: Electrical Engineering

Advisor/Co-Author: Farzad Ferdowsi

School: University of Louisiana at Lafayette

Abstract:

The impact of High-Impact Low-Frequency (HILF) events on space power system infrastructure has mostly been studied in the form of risk assessment by quantifying the likelihood of events' occurrence. Although identifying the risk, the probability and related consequences of HILF events are important factors for quantifying resiliency in a power system that can adopt mechanisms to handle HILF perturbations and recover from irregular conditions as quickly as possible. Durability, survivability, and self-healing capacity, however, are the main time-dependent elements of power system operational resiliency which differentiate it from the risk assessment. These parameters are becoming more important as they are main resilience characteristics of modernized electric power systems such as microgrids used in space power systems. This study contributes to the development of a novel informative metric deployed to quantify the space power system resiliency as the system's ability to reduce the magnitude and duration of the disturbance when the system is affected by a major disturbance.

### ***Red Edge Spectroscopic Study of Bovine Serum Albumin Before and After UV Photolysis with Two Fluorescence Dye Probes***

\*Session 2 – Magnolia Room

Presenter: Taylor Mabile

Area of Study: Chemistry

Advisor/Co-Author: Matthew Marlow

School: Nicholls State University

Abstract:

This research involves investigating the protein structural changes of the two tryptophan residues of bovine serum albumin (BSA) before and after UV photolysis using two fluorescence dye probes. Photolysis of BSA was performed at 3 wavelengths: 220, 254, and 300 nm. The two

dye fluorescent dye probes used, 1-anilinonaphthalene-8-sulphonic acid (ANS) and 2-p-toluidinylnaphthalene-6-sulphonate (TNS), were investigated before and after UV photolysis utilizing red edge spectroscopy. In order to minimize any photo-bleaching of the probes, ANS and TNS were added after the photolysis of BSA. Tryptophan degradation occurs very rapidly with exposure to UV light and a substantial decrease in fluorescence intensity for ANS was observed, indicating destruction of some ANS binding sites on BSA. The decrease in intensity was 68, 64, and 85% for 220, 254, and 300 nm wavelengths respectively. Minimal red shifts are observed for the ANS-BSA. For the TNS-BSA system, the red shift patterns are very similar to ANS, but with a slight blue shift for all wavelengths of 2 to 5 nm after photolysis. The reduction in the TNS fluorescence intensity was minimal after photolysis compared to ANS. The decrease in intensity was 38, 40, and 27% for 220, 254, and 300 nm wavelengths respectively. This suggests that TNS binds to different locations due to its structure compared to ANS. From this work, TNS appears to be a more localized effect than ANS and occupy the Trp 134 residue located in a fatty acid binding pocket due to TNS having a more linear structure than ANS.

***Sense of belonging and perceived social support: The role of ethnic minorities' perceived appearance***

\*Session 1 – Pelican Room

Presenter: Brooklyn Thibodeaux

Area of Study: Psychology

Advisor/Co-Author: Manyu Li

School: University of Louisiana at Lafayette

Abstract:

This study aims at studying the role of skin color and hairstyle in college students' sense of belonging and perceived social support. Previous studies showed that the skin tone and hairstyle of people belonging to ethnic minority groups may be related to prejudice and that prejudice is often found to be related to one's perceived sense of belonging and social relations. Therefore, we are interested in studying whether there is a relations between perceived appearance (hairstyle and skin tone) and students' perceived sense of belonging and social relations. About 128 college students will be recruited to participate in the survey. Students will be asked to report different aspects of their academic and social life, such as perceived support and prejudice, frequencies to go to tutoring, utilization of professors' office hours, and their involvement in student organizations. Students will also report their hairstyles and skin tone, and whether they perceive their styles and skin tone as attractive and common. Expected results/hypotheses: It is expected that people who are racial/ethnic minorities and with darker skin tone may perceive more barriers to social relations (i.e. lower perceived social support). It is also expected that people who perceive their hairstyle as unattractive or uncommon may feel less belonging to the school and may feel less social support

### ***Sesimic Performance of RC Columns***

\*Session 1 – Shadows Room

Presenter: [Aashka Kasaju](#)

Area of Study: Civil Engineering

Advisor/Co-Author: Ahmed Abdel-Mohti, Sophie Campbell

School: McNeese State University

Abstract:

This study aims to conduct non-linear cyclic analyses of RC column connections strengthened with FRP composites. From previous events, it has been discovered that damage in RC buildings and bridges can take place due to construction and design issues. One of the major causes of damage is non-ductile design of RC column connections. The joint experiences lack of ductility, the main source of underperforming under the effect of earthquake. The lack of strength and ductility in connection may lead to sever damage. Opensees software will be used and results will be verified against an experimental study available in the literature. The configuration of the FRP strengthening system (i.e. transverse, longitudinal, and combined) will be studied to propose the best system optimizing the strength and ductility of the connections. Initially, numerical column models with and without FRP jackets subjected to cyclic loading will be modelled and analyzed using Opensees. The accuracy of modeling will be verified by comparing the results against their experimental counterparts. The verified model will be used to examine different FRP configurations enhancing both strength and ductility to desirable level. This research is important because it will present ways to improve ductility and strength of RC column connections.

### ***Solubility-Based Extraction of Biosolid Proteins for SEC Characterization***

\*Session 1 – Shadows Room

Presenter: [Lauren E Prudhomme](#)

Area of Study: Chemical Engineering

Advisor/Co-Author: William Holmes, Alexandra Arcement

School: University of Louisiana at Lafayette

Abstract:

Biosolids are formed as a product of wastewater treatment and can be used to make several value-added products including fertilizer, soil amendment, and in this project, glue. They are comprised of all of the solids removed from pre-treated municipal sewage. Together, these solids form a nutrient-packed organic material that poses negligible risk to humans, crops, and the environment. University of Louisiana at Lafayette graduate students working at the Energy Institute of Louisiana have formulated a method to convert biosolids into an adhesive material via caustic reaction. To further understand the biochemical behavior behind this transformation, a series of analytical methods – solubility-based extraction, size-exclusion chromatography, liquid chromatography, and mass spectrometry, chronologically – were conducted on wet, pre-polymer-addition sludge. This publication describes the extraction method used to obtain five major classes of proteins – albumin, globulin, prolamin, acidic glutelin, and basic glutelin – and their molar mass distributions as given by size-exclusion chromatography assay.

### ***Spark Plasma Sintering of Ultra High Temperature Ceramic Powders: micron-size and nano-size ZrB<sub>2</sub>+SiC***

\*Session 1 – Shadows Room

Presenter: Ryan Burrell

Area of Study: Mathematics & Physics

Advisor/Co-Author: Dr. Naidu Seetala

School: Grambling State University

Abstract:

ZrB<sub>2</sub>+SiC ceramic composites are useful for application in hypersonic vehicles. Uniform distribution of SiC with high densification and low grain growth are important factors for high temperature oxidation prevention. The spark plasma sintering (SPS) consolidation of the micron-size and nano-size ZrB<sub>2</sub>+SiC powders was performed at 32 MPa & 2,000°C. The SEM observations showed reduction in granular size and minimum segregation of SiC in nano-composites compared to micro-composites, but with oxidation of ZrB<sub>2</sub> to form ZrO<sub>2</sub> during SPS. The nano-powders were reduced to minimize oxidation. The flexure strength of the SPS consolidated composites increased from 54 MPa for micro-composite to 290 MPa for nano-composite, and to 426 MPa for reduced nano-composite. The micro-hardness increased from 1528 for micro-composite to around 1980 VHN for nano-composite. The grain size and the flexure strength shows an inverse relationship. But, the inverse proportionality relation between the grain size and micro-hardness is not evident.

### ***Study Geometric Morphometric Similarities between Sternarchella Sister Species***

\*Session 1 – Magnolia Room

Presenter: Ainsley Ellis

Area of Study: Biology

Advisor/Co-Author: Aaron Fronk, Meagan Froeba

School: University of Louisiana at Lafayette

Abstract:

Geometric Morphometrics is a technique used to compare and contrast characteristic morphology of organisms. This study is focused on the biological shape analysis and shape variation between sister species of the genus, Sternarchella, an Amazonian electric fish. Sternarchella have a diversity of morphological characters between species, some of which distinguish one species from another. We have mapped these landmarks, photographed them and obtained empirical data from ImageJ and MorphoJ, morphometric software programs designed for studies such as this one, in order to conduct a phylogenetic comparison of their shape characteristics. The preserved specimen used were all adult Sternarchella from the species *S. calhamazon*, *S. patriciae*, and *S. sima*. Data collected is presented in a series of X,Y coordinates which mark various locations in which distance from one landmark to another are measured and then these measurements are analyzed.

### ***Suicide Contagion: Examining the Effects of Celebrity Suicides***

\*Session 1 – Pelican Room

Presenter: Gabrielle Chaney

Area of Study: Criminal Justice

Advisor/Co-Author: Jada Hector, LPC, MA

School: University of Louisiana at Lafayette

Abstract:

Deaths by suicide of celebrities and other influential people within any community or culture may have a substantial impact on the mental health of their followers. Considering this, certain media reporting methods concerning these deaths may be detrimental to those listening. Reporting methods that include excessive coverage and focus on the details of the case may result in what is termed as “suicide contagion”. Suicide contagion is defined as an increase in suicide rates of those exposed to this reporting, especially those who share similar characteristics or feel connected in some way to the celebrity in question. Due to suicide contagion being a relatively new topic of discussion, this research is exploratory in nature. This project seeks to understand more about the impacts of media reporting on mental health through surveying students on their personal experiences regarding reporting of celebrity suicides. The results of this research aim to identify how students primarily learn about celebrity suicides and the coping mechanisms they use afterwards. Policy implications of these results include promoting responsible reporting methods and resources for fans following the death by suicide of a celebrity.

### ***Synthesizing Mesoporous Ceria Using COK-19***

\*Session 2 – Magnolia Room

Presenter: Ide'yonn M. Joseph

Area of Study: Chemistry

Advisor/Co-Author: Dr. Hui Yan, Lingyiqian Luo, Kristan Felder, Alexis Olivier, Maci Fremin

School: University of Louisiana at Lafayette

Abstract:

Mesoporous ceria, or m-ceria, has been synthesized using COK-19, a relatively new mesoporous SiO<sub>2</sub>, as a template. Mesoporous material is defined as a material containing pores with diameters between 2 to 50 nm. To characterize the synthesized template COK-19 and then m-ceria from COK-19, Brunauer-Emmett-Teller measurement (BET, gives the information of the surface area, particle size, and particle size distribution) and transmission electron microscopy (TEM, gives the methodology or the structure of the compound being made) were used. From the BET, it was found that the surface area for the COK-19 was 1.3×10<sup>3</sup> m<sup>2</sup>g<sup>-1</sup>, whereas the surface area of the m-ceria from COK-19 was 1.7×10<sup>2</sup> m<sup>2</sup>g<sup>-1</sup>. The average particle size for COK-19 and m-ceria were 4.4nm and 35.0nm, respectively. The pore volume of COK-19 was 1.9 cm<sup>3</sup>g<sup>-1</sup> while the pore volume of m-ceria from COK-19 was 0.52cm<sup>3</sup>g<sup>-1</sup>. From the TEM, the COK-19 and m-ceria from COK-19 morphology were demonstrated and have the similar structures. Thus, that m-ceria was successfully made and will be used for future research.

### ***Teaching Tablet Technology to Older Adults***

\*Session 2 – Pelican Room

Presenter: Judy C Dobler, Seth Serpas, Ma'lik Jones

Area of Study: Health Informatics

Advisor/Co-Author: Dr. Beenish Chaudry

School: University of Louisiana at Lafayette

Abstract:

Learning a new skill such as the use of a tablet can open the door to a new world for older adults and potentially have a positive impact on their quality of life. We conducted a semi-longitudinal study to understand the impact of tablet use on older adults. Teaching tablet teaching was an important part of our study because majority of seniors were novice users. In this paper, we report teaching and learning strategies that we found useful in teaching tablet skills to older adults. We describe challenges faced by seniors and present some recommendations to circumvent those challenges.

### ***The Effect of 2-4D on Aquatic Macroinvertebrate Communities***

\*Session 2 – Pelican Room

Presenter: Mariana Kendall

Area of Study: Environmental Science

Advisor/Co-Author: Aimee K. Thomas, Ph.D.

School: Loyola University New Orleans

Abstract:

Water hyacinth is an invasive aquatic plant that poses a threat to southeast Louisiana wetlands, disrupting hydrology and displacing native flora and fauna. In New Orleans City Park, the herbicide 2-4D is sprayed aerially on hyacinth to control its spread. This study quantified the effects of the herbicide on the aquatic macroinvertebrate community that uses the hyacinth roots as a novel habitat and alterations to lagoon water quality. Water chemistry data revealed a change in the level of nitrate, phosphate, ammonia, and dissolved oxygen, which may affect macroinvertebrate populations. Preliminary data suggest significantly fewer aquatic macroinvertebrates were present in treatments with 2-4D than in treatments without. Spraying water hyacinth with 2-4D negatively impacts the aquatic macroinvertebrate community that use the roots as a novel habitat. By comparing data from different treatment groups, we have observed the effects of 2-4D on aquatic macroinvertebrates living on water hyacinth.

### ***The Effect of Geometry on Macroscopic Quantum Coherence in Light-Harvesting Nanotubular Complexes***

\*Session 1 – Magnolia Room

Presenter: Coleman Green

Area of Study: Quantum Biology

Advisor/Co-Author: Dr. Armin Kargol, Guiseppe Luca Celardo

School: Loyola University New Orleans

Abstract:

We study nanotubular self-aggregates of chlorophyll molecules, which are essential for light harvesting and energy transport in photosynthesizing Green Sulphur Bacteria. If these

structures are well understood, then we can replicate them in labs and create efficient photoreceptors. A quantum mechanical model of a mutant variety of Green Sulphur Bacteria (Mutant Type) has shown that these structures, which are stacks of rings of 60 photoactive molecules with large transition dipoles, support quantum coherences at room temperature. Consequently, photoexcitations can be delocalized over many molecules. This leads to the emergence of superradiant states, which absorb and emit light at much faster rates than a single molecule. However, the strength of these effects depends on the geometric arrangement of these structures. To further study the role of geometry, we changed the geometric parameters, such as the orientation of the dipoles, and compared the results to the original structure. We found that photoexcitonic delocalization is sensitive to these changes. We then created an entirely new model based around the golden mean (Golden Mean Type) and showed that it also supports superradiant states. Lastly, we studied a model with entirely random positions for the molecules and showed that these quantum effects disappear. So, an open question is to understand the relationship between delocalization and dipole strength. In the future, we hope to answer this question by studying the geometries that optimize these effects.

### ***The Effectiveness Alcoholics Anonymous Has on African-American Men***

\*Session 2 – Shadows Room

Presenter: Dawn Penn

Area of Study: Sociology

Advisor/Co-Author: Ashraf Esmail

School: Dillard University

Abstract:

According to Tonigan et. al, it is stated that "the assessment of minority utilization of AA therefore should go beyond simple measurements of the frequency of AA attendance, because such measurements might underestimate the influence of AA on the recovery efforts of minority clients" (283). The purpose of this study is to investigate how effective Alcoholics Anonymous is for African Americans who do not regularly attend Alcoholics Anonymous meetings. The research question to be addressed is how effective is Alcoholics Anonymous for African Americans who do not regularly attend meetings. Results from focus groups will be shared.

### ***The Experiences of Students with Disabilities in Self-Contained Physical Education***

\*Session 2 – Shadows Room

Presenter: Sarah Pellerin

Area of Study: Kinesiology

Advisor/Co-Author: Dr. Wesley J. Wilson, Dr. Justin A. Haegele

School: University of Louisiana at Lafayette

Abstract:

Inclusion has emerged as a global area of concern in education over the past 30 years (Haegele, 2019). Successful inclusion, as an educational philosophy, has been described as the subjective feeling of belonging, acceptance, and value, and is unique to each student and their own interpretation of events (Stainback & Stainback, 1996). While inclusion has emerged as a popular subject in physical education literature, little research has focused on the inclusiveness

of physical education in self-contained settings, especially from the perspectives of the students with disabilities themselves. The purpose of this study was to explore the inclusiveness of physical education in such settings based on students' subjective experiences, using Stainback and Stainback's (1996) conceptual framework of inclusive education as a guiding lens. A qualitative description design was employed that permitted a variety of sampling, data collection, and analysis techniques (Sandelowski, 2010). The use of maximum variation sampling resulted in a sample of 22 school-aged participants with disabilities (17 males, 5 females) who were enrolled in self-contained physical education classes in a local school parish. Data collection included individual interviews, participant drawings of their experiences in self-contained physical education, and researcher notes. A three-step inductive thematic analysis plan was used as the lead researcher: (1) read and reread each case leading to an initial construction of emerging themes (Smith 2017), (2) summarized the essence of each participants' experience, and (3) conducted a cross-case analysis of all cases (Patton, 2015). This process resulted in an emergent three-theme structure which included: importance of friendship, interests in specific sports, and enjoyment in self-contained settings. These findings reflect positive-leaning subjective experiences of the students with disabilities in self-contained physical education, which seems counterintuitive given traditional stances that inclusive education must be provided in integrated settings. More research is needed to extend these findings.

### ***The Impact of Different Definitions of Sexual Harassment on College Campuses on Perceptions of Students***

\*Session 1 – Pelican Room

Presenter: Kelsey Mayes, Lauren Neumeier

Area of Study: Psychology

Advisor/Co-Author: Dr. Amy Brown, Megan Fowler

School: University of Louisiana at Lafayette

Abstract:

Despite Title IX's effort to outlaw sexual misconduct, sexual harassment continues to be prevalent on college campuses. In 2018, Secretary of Education, proposed a narrower definition of sexual harassment in academic settings than the previous, broader Obama-era one. This study aimed to investigate the effect of exposure to a narrower vs. a broader definition of sexual harassment on college students' perceptions of academic sexual harassment. Participants were 244 undergraduates at the University of Louisiana at Lafayette. They were given a sexual harassment scenario, either the narrow or broad definition of sexual harassment, and follow up questions regarding their perceptions. Results were analyzed using five 2 (condition: narrow definition vs. broader definition) x 2 (participant gender: male or female) ANOVAs to test for main effects of the IVs and their interactions. We found that gender indicated feelings of sympathy and blame towards the victim and whether the victim should feel passive, benign, or blame herself. Our hypothesis that the definition would influence the participants' perceptions about the scenario was not supported.

### ***The Impact of Social Integration of Individuals with Intellectual Disabilities in Collegiate Settings***

\*Session 2 – Pelican Room

Presenter: Claire Carriere

Area of Study: Strategic Communication

Advisor/Co-Author: Dr. Amal Bakry, Justin Manceaux, Cheramie Wagoner

School: University of Louisiana at Lafayette

Abstract:

While social integration has been a topic discussed since the 1990's when the Americans with Disabilities Act was developed as a civil rights law, newer studies and ideas on integration have been developed over the last couple decades in regard to increasing the quality of life for individuals with intellectual disabilities. One idea that has been presented to increase the quality of life for these individuals is to improve their independence by setting them up for success through job preparation in post-secondary educational settings, which many universities in the United States have adopted. As universities adopt these programs, there are many things to think about such as what has previously worked in the past for these individuals to best transition into their roles as students, what has proven to be difficult within the transition into post-secondary programs, how traditional collegiate peers and professors feel about the transition, and how all of these factors impact the confidence level for the individual to be capable of developing skills and healthy self-esteem to advocate for themselves in society. This topic is important because two to three percent of the population is diagnosed with an intellectual disability with estimation for these numbers to grow in the future based on our evolving social climate (Kampert & Goreczny, 2007). This study will particularly emphasize on factors that impact integration within a collegiate setting, in post-secondary programs for individuals diagnosed with intellectual disabilities.

### ***The Impact of Spirituality on Metabolism***

\*Session 2 – Shadows Room

Presenter: Alanna Grace Hoffpauir

Area of Study: Kinesiology

Advisor/Co-Author: Dr. David Bellar, Dr. Gregory Davis

School: University of Louisiana at Lafayette

Abstract:

While it is becoming increasingly evident that there is a correlation between spiritual health and physical well-being, little is known about the impact of spiritual health on physiological mechanisms. Purpose: The purpose of this study was to research the impact of spirituality on metabolism, specifically cholesterol levels, glucose levels, and body fat percentage. Method: Fifty-three college-age adults participated in this study. Each participant visited the laboratory once. Testing included psychometric surveys, measurement of fasting cholesterol and glucose levels via a finger prick, and the measurement of body composition by the BodPod. Results: Total cholesterol was not found to be significantly correlated to spirituality ( $\rho = -.1792$ ,  $p = .2131$ ). However, total cholesterol was found to be negatively correlated with anger ( $\rho = -.3706$ ,  $p = .0298$ ). Low-density lipoproteins (LDLs) were found to be negatively correlated with total mood disturbance ( $\rho = .2878$ ,  $p = .0473$ ). Glucose levels were significantly correlated with religious

well-being ( $\rho = .3002$ ,  $p = .0289$ ). Body fat percentage was not found to have a significant correlation with spirituality ( $\rho = .0608$ ,  $p = .6687$ ). Conclusion: Results indicate that spiritual health may not impact cholesterol levels or body fat percentage, but religiosity may play a role in glucose uptake and metabolism. Mood may also play a role in the alteration of physiological mechanisms. More studies are needed in order to learn more about the relationships among spirituality, psychological state, and physiological mechanisms.

### ***The Psychology of Oddly Satisfying Videos***

\*Session 1 – Pelican Room

Presenter: Grace Kerns

Area of Study: Psychology

Advisor/Co-Author: Dr. Margaret E. Cochran

School: Northwestern State University

Abstract:

Oddly satisfying videos are a poorly defined internet fad; we define an oddly satisfying video as a compilation of clips of a person manipulating slime, sand, foam, artwork, soap, or other small objects with their hands. All are shot from a point-of-view perspective, in front of a pale background, and involve features such as bright colors, ASMR-like sounds, geometric shapes, or themes. These videos are often described as calming, mesmerizing, or hypnotizing, and thus may be tied to a person's anxiety level. State anxiety is the temporary level of anxiety an individual feels because of specific life experiences and is changeable. Trait anxiety is an individual's proneness to anxiety on all occasions and is relatively stable. Participants' state anxiety will be measured before and after watching a video, either focusing on one of the aspects of oddly satisfying videos (visual, audio, rhythm, and fun) or the control video (a compilation video of equal length that does not feature any of the aspects of oddly satisfying videos). Changes in state anxiety will be compared to demographic variables and trait anxiety levels (measured before the experiment begins) to determine whether any one type of oddly satisfying video decreases state anxiety in individuals.

### ***The Relationship between Hookup Participation, Drinking Behavior, and Psychological Well-Being***

\*Session 1 – Pelican Room

Presenter: Gabriel Hunter

Area of Study: Psychology

Advisor/Co-Author: Dr. Amy L. Brown, Dylan A. John

School: University of Louisiana at Lafayette

Abstract:

Hooking up—casual sex encounters—have become increasingly popular in recent years (Bogle, 2008). There is evidence to suggest that substance use, namely alcohol, is positively associated with engagement in hookup behaviors (Lewis et al., 2012; Walsh et al., 2014). When examining psychological well-being (PWB) and hookup participation, there are mixed findings: some evidence suggests that there is no association between hooking up and PWB; other evidence suggests that there is a negative association between PWB and hooking up for women, but positively associated in men. Thus, the current study sought to examine how the context of

alcohol consumption may affect PWB resulting from hookups and to examine how drinking behavior is associated with hookup behavior. Results indicated that the proportion of alcohol-involved hookups and nonalcohol-involved hookups were not significantly different. While there was a higher proportion of students who drink and hookup than students who drink and do not hookup, there were no significant differences in PWB regardless of hookup type or whether or not the participants consume alcohol. The current findings are consistent with research suggesting that alcohol use and hooking up are associated (Walsh et al., 2014), but contrary to research showing a positive association between negative affect resulting from alcohol-involved hookups.

### ***The Relationship Between Time Perspective and Depressive Symptoms***

\*Session 1 – Pelican Room

Presenter: Nadia Turki

Area of Study: Psychology

Advisor/Co-Author: Dr. Yang Yang

School: University of Louisiana at Lafayette

Abstract:

This study aims to evaluate the correlation and connection between time-perspective with depressive-like symptoms, seeking professional help, and professional diagnosis of depression. A sample of 156 participants aged 18 years or above were recruited for voluntary participation in this study. Using a survey comprised of demographic questions, a shortened Zimbardo's Time Perspective Inventory (ZTPI), and Beck's Depression Inventory-15 (BDI-15), correlation and t-tests were utilized to analyze the relationships between the variables. The study's results show that there are significant correlations between each of the five time perspectives (sans present-hedonist perspective) and depression ( $p < .0001$ ) in which higher past negative, future negative, and present fatalistic are correlated with higher levels of depression. The results of the t-test show that people who seek help reported a higher level of future negative behavior than people who do not seek help ( $t = -2.09, p = .0388$ ), as well as having a lower level of future positive than people that do ( $t = 2.34, p = .021$ ). People who had been professionally diagnosed with depression reported a higher level of Past Negative than those who were not ( $t = -2.39, p = 0.0198$ ), as well as a lower level of Future Positive characteristics than those that were not ( $t = 2.08, p = 0.041$ ). These t-tests show that there is a significant relationship between the ZTPI and BDI-15, seeking professional help, and professional diagnosis of depression. Future studies may examine how time perspective serves as an additional tool of assessment for depressive-like symptoms.

### ***The Role of the School Nurse in Serving High School LGBTQ Students***

\*Session 2 – Pelican Room

Presenter: Devin Touchet

Area of Study: Nursing

Advisor/Co-Author: Jeanne Manuel, Kelley Colgin, Dionne James, Taylor Meche, Jaycie Ray

School: University of Louisiana at Lafayette

Abstract:

The LGBTQ community is growing in high schools around the country which raises the question for school nurses on how to competently care for this population. This adolescent population experiences health disparities such as mental health issues, increases in school absences, and an increase in STI and HIV rates. Research has shown that schools that have school nurses who are educated regarding the LGBTQ community leads to positive outcomes such as a decrease in health disparities and increase in academic achievements. In addition, nurses lack appropriate education and make assumptions causing the population discomfort and avoidance of seeking medical care. The resource investment needed to educate nurses on how to provide competent care is essential. This leads to an increase in mental health awareness, decrease STI/HIV rates, increase in academics, better health care, therapeutic relationships, and many more. It is important that school nurses receive the proper education to achieve better outcomes for this population.

### ***The schizophrenia susceptibility gene dysbindin negatively impacts learning and memory in Drosophila melanogaster***

\*Session 2 – Magnolia Room

Presenter: Rebecca Krueger

Area of Study: Biochemistry

Advisor/Co-Author: Dr. Alyssa Johnson

School: Louisiana State University

Abstract:

Schizophrenia is a severe mental disorder affecting feelings, thoughts, and behaviors. Patients suffering from schizophrenia suffer from positive, negative, and cognitive symptoms. Cognitive symptoms vary from patient to patient in severity and include impaired executive functioning, difficulty focusing, and impaired working memory. Genetic factors, such as the gene encoding dysbindin, play an important role in disease susceptibility. Learning in the fruit fly *Drosophila melanogaster* was tested using an aversive phototoxic suppression (APS) assay. This assay works based on classical conditioning and takes advantage of the fact that flies are inherently attracted to light. Flies enter a T-maze and are given the option of entering a light tube or remaining in the dark tube. The light tube contains filter paper soaked with quinine hydrochloride, an aversive scent. A set number of training trials are performed, each lasting one minute, in which flies are given the opportunity to freely enter and leave the light tube. Immediately following training, five test trials are performed; each fly is given fifteen seconds to either enter the light tube or remain in the dark tube. Thirty minutes after training, flies are given another five test trials. Learning and memory in wildtype flies and two mutant strains, *dysbe01028* and *dnc1*, were studied. *dysbe01028* mutants have a hypomorphic loss-of-function allele that results in low levels of dysbindin. *dnc1* mutants are known to have learning deficits

and, along with wildtype flies, were used as a benchmark for evaluating learning impairments. Wildtype flies had an average pass rate of slightly above 50%. *dnc1* mutants required more trials to learn and still displayed diminished memory compared to wildtype. *dysbe01028* flies displayed severe memory impairment and required a significantly larger number of trials to learn.

### ***Theoretical Analysis of the Viability of Isopropanol-Cyclohexane Solvent Systems for Biomatter Lipid Extraction***

\*Session 1 – Shadows Room

Presenter: Kyle Zappi

Area of Study: Chemical Engineering

Advisor/Co-Author: Dr. Emmanuel Revellame

School: University of Louisiana at Lafayette

Abstract:

An alternative solvent for the extraction of lipids from biomatter is evaluated with respect to extraction efficiency. Instead of the more common combination used in the Bligh and Dyer Method (Methanol and Chloroform), Isopropanol - Cyclohexane solvent system was considered. The alternative solvent system utilizes solvents that do not pose as high as a toxicological concern, while maintaining a similar level of practical viability according to previous experimental testing. In the study, the two solvent systems were compared using phase diagrams obtained from simulation software Aspen Plus. This was done by comparing the two extraction systems operating at same number of extraction stages on a cross-flow configuration.

### ***Ultrasonic Degradation of Metribuzin***

\*Session 2 – Magnolia Room

Presenter: Nicholas Mayon

Area of Study: Chemistry

Advisor/Co-Author: Darcey Wayment

School: Nicholls State University

Abstract:

Metribuzin is a widely used herbicide that is commonly used in agriculture to control broadleaf and grassy weed species. Like other triazine herbicides, there is concern about its persistence in the environment and its potential to contaminate surface and ground waters. The sonolytic removal of this herbicide from wastewater was investigated in this study. Metribuzin in aqueous media was subjected to ultrasound using different sources; a low power cleaning bath and a 20 kHz probe type horn. Enhanced rates of metribuzin degradation occur with both systems. Degradation rates significantly increased using the 20 kHz probe type horn. With metribuzin decreasing by 94.7% in 4 hours with a 50% amplitude. The same results could be completed in half the time using a 100% intensity on the sonochemical probe. High-Performance Liquid Chromatography (HPLC) and Gas Chromatography Mass Spectrometry (GCMS) were used to analyze the sonicated solution for metribuzin levels and degradation products. The decrease in metribuzin concentration resulted in the formation of the metabolites deaminated (DA) diketometribuzin (DK) and deaminated diketo-metribuzin (DADK). Other peaks formed in the HPLC results are being investigated to identify other potential metabolites.

The rate constant found for the degradation appears to fit a first order reaction model. Spike recoveries for the HPLC method ranged from 98% - 112%. The optimum experimental conditions, as well as rate constants of the degradation will be presented.

### ***Use of Medical Marijuana for Neurologic Disorders in the Pediatric Patient***

\*Session 2 – Pelican Room

Presenter: Katherine Comeaux, Katie Grappe

Area of Study: Nursing

Advisor/Co-Author: Jeanne Manuel, Layne Frey, Nicole Guidry, Bethani Speyrer

School: University of Louisiana at Lafayette

Abstract:

Cannabidiol (CBD), a non-intoxicating cannabinoid found in marijuana, possesses neuroprotective, anti-inflammatory, and antioxidant properties. With the recent increase in legalization and utilization of medical marijuana in healthcare in the United States, much is unknown about treatment and effects on the pediatric patient. The Epilepsy Foundation would like to aid providers and parents, in collaboration with researchers and other professionals in the pediatric healthcare field, to further identify treatment options and candidates for treatment. However, research about the safety and efficacy of marijuana's effects in treating neurologic disorders in the pediatric population is lacking. The purpose of this literature review aims to disseminate and study current research and raise awareness about the risks versus benefits of utilizing medical marijuana in treating neurologic disorders, specifically epilepsy, in the pediatric patient. Nurses can play a vital role as patient advocates and teachers in educating parents weighing the risk and benefits of the use of cannabidiol in epilepsy treatment. Nurses and healthcare providers should be well versed in the risks versus benefits of utilizing medical marijuana in the pediatric patient, as well as, have knowledge of correct dosing, therapeutic levels, side effects, safety and efficacy with the use of medical marijuana in the pediatric patient.

### ***Using Drosophila to Understand How a Human Short Sleep Mutation Offsets Negative Effects of Sleep Deprivation***

\*Session 1 – Magnolia Room

Presenter: Stephen Lopez

Area of Study: Biological Sciences

Advisor/Co-Author: Alyssa Johnson, Olga Dubuisson

School: Louisiana State University A&M

Abstract:

Neurodegenerative disorders, such as Alzheimer's and Parkinson's have become more prevalent in recent decades and have continued to forever change the lives of the affected and their families, but what if the secret to a cure lies in a natural behavior most organisms do every day? Sleep is universal among all terrestrial animals and essential for long-term survival. In humans, chronic sleep loss correlates with decreased physiological performance and cognitive deficits. Animal models of sleep deprivation mirror many hallmarks of neurodegenerative diseases, including increased protein aggregates in the brain, suggesting that chronic sleep loss could be a driving factor for many neurodegenerative diseases. Given these observations, it is clear that sleep is important to maintain a healthy nervous system, but the health-promoting

mechanisms that are activated during sleep are largely unknown. Humans need on average 8 hours of sleep per night to receive full restorative benefits of sleep. However, people with a single nucleotide polymorphism in the Dec2 gene (Dec2-P385R) sleep ~6 hrs/day, without experiencing negative effects normally associated with sleep deprivation. This suggests that these individuals possess compensatory mechanisms that allow them to tolerate less sleep. Similar to humans, we have found that *Drosophila melanogaster* (fruit flies) expressing Dec2-P385R mutant exhibit a 29% reduction in sleep, making them a good model to understand how the Dec2 mutation allows organisms to tolerate less sleep. Many recent studies now indicate an important function of sleep is to clear cellular waste products that accumulate while awake. The autophagy-lysosome system is the major pathway for clearing cellular waste products. We are now comparing the expression levels of autophagy and lysosome related genes between Dec2-WT and Dec2-P385R mutant flies to determine if Dec2-P385R increases autophagy-lysosome activity. These studies have potential to reveal novel signaling pathways that promote nervous system health even in sleep-deprived conditions.

### ***What Would Your Character Do?***

\*Session 2 – Shadows Room

Presenter: Madeline Hammer

Area of Study: Anthropology

School: University of Louisiana at Lafayette

Abstract:

My research focuses on tabletop roleplaying games, specifically Dungeons & Dragons, and how the improv aspect of the game can give one the skills needed in their career and day to day life. As well as the roleplaying portion of the game which allows the players to create their own characters and truly step into another person's shoes. Allowing them to see life from a different perspective, offering the players the ability to view the world from multiple angles than what they might have previously done both in-game and out of game. I believe that these two skills can be transferred from the table to real life and make people more understanding and caring than they might have previously been.

# Schedule for Oral Presentations

SATURDAY, NOVEMBER 23, 2019

## **Session 1: 8:30 AM – 9:45 AM**

2 Presenters = 30 min./each

3 Presenters = 20 min./each

4 Presenters = 15 min./each

### **Session 1, ROOM #1 Pelican Room**

**Presenter: Chris Oubre**

School: Nicholls State University

Advisor/Co-Authors: Raj Boopathy

Area of Study: Biology

Title: **Effect of Silver Oxide Nanoparticle on the Sediment Bacteria of the Gulf Of Mexico in Removing Carbon and Nitrogen**

Abstract:

Nanoparticle use in engineering, medicine, cosmetics, personal care products, and manufacturing is becoming more common. Nanoparticles are incredibly useful because of their ability to change the properties of the compound they are made of, but unfortunately have been reported to be toxic to microbes including bacteria. Because nano particles are becoming commonplace, it is likely that they are being disposed of improperly and will inevitably end up in the coastal waters of South Louisiana because of drainage of the Mississippi watershed into this coastal ecosystem. Nano particles in coastal waters should have an impact on the bacterial that play a key role in biogeochemical cycles such as carbon, nitrogen, and phosphorus cycles, but to our knowledge no such study on this subject has been reported. In this study, sediment samples were collected from Grand Isle and Cocodrie of coastal Louisiana and were enriched for common heterotrophic bacterial that carry out carbon and nitrogen cycles in coastal waters. These enriched bacterial were exposed to various concentrations of silver oxide nanoparticle. The results showed that the nanoparticle at concentrations of 10 mg/L or above were lethal to the bacterial and the bacterial growth was inhibited resulting in no loss of carbon and nitrogen from the media. The lethal concentration 50 (LC50) of silver oxide for the coastal bacteria will be studied and the effect that silver oxide nanoparticles have on the carbon and nitrogen cycle in the natural water systems will be reported in this paper.

**Presenter: Ethan Naquin**

School: Nicholls State University

Advisor/Co-Authors: Ramaraj Boopathy

Area of Study: Biology

**Title: Presence of multi-drug resistant pathogens and antibiotic resistance genes in waterways and seafood populations of rural Southeast Louisiana**

Abstract:

The spread of antibiotic resistance is a growing global concern in recent years. Improper usage and disposal of antibiotics by consumers, hospitals, and industries has furthered the emergence of antibiotic resistance in the waterways of Southeast Louisiana, namely Bayou Lafourche and Bayou Terrebonne, a main source of drinking water impacting over 701,000 individuals that live along its banks. Additionally, there are existing reports of exposure to antibiotic-resistant bacteria through direct contact with seafood. In Louisiana, one out of every seventy jobs are related to the seafood industry, and this region exports roughly 1 billion pounds of seafood each year at a value of 2.4 billion USD. Although the implications of an increasing presence of antibiotic resistance in the rural environment is alarming, there are very few studies dealing with this phenomenon in other similar locations. In this study, water samples were collected as well as samples from various species of freshwater fish and shellfish—common seafood caught in the area—and the occurrence of antibiotic-resistant bacteria was monitored. This survey of antibiotic-resistant bacteria and genes was accomplished using Kirby-Bauer Assay as well as PCR techniques for gene display. The results of this study show the presence of multi-drug resistant bacteria exhibiting resistance to all antibiotics tested. Furthermore, various bacteria containing the *sul1* and *sul2* genes, genes for sulfonamide drug resistance, were isolated. Further work will continue to search for additional antibiotic resistance genes.

**Presenter: Jared M. Chan**

School: Loyola University New Orleans

Advisor/Co-Authors: Dr. A.P. Bucolo

Area of Study: Biology

**Title: Effects of riparian canopy removal on primary production of microenvironments and subtidal macrophytes in a Florida river.**

Abstract:

Primary production has been found to drive energy allocation and increase biodiversity in riverine riparian subtidal communities. Availability of sunlight is essential to drive photosynthesis and subsequent primary production which provides energy up the food web. Excessive overgrowth of riparian canopy had inhibited available sunlight in Turkey Creek, Niceville, FL, part of the watershed home to the threatened fish *Etheostoma okaloosae* (Okaloosa darter). We hypothesized that increasing light availability by removing canopy cover and exposing a series of river sites to sunlight would significantly increase primary productivity across autotrophic microenvironments and macrophytes. Primary production assessed via dissolved oxygen rate of change converted to carbon fixation ( $\text{mg C} \cdot \text{m}^{-2} \cdot \text{hr}^{-1}$ ) was significantly greater in open canopy sites compared to controls with typical canopy cover. Specifically, by microenvironment, filamentous algal biofilms and sediment-associated microalgae showed statistical significance. Plant communities and algal biofilms were also significantly more abundant in open versus closed canopy sites. We conclude that increased light availability will drive increased rates of primary production, energy allocation, and therefore food web stability to aid in the conservation of the threatened food web stability to aid in the conservation of the threatened darter in this system.

## **Session 1/ROOM #2**

### **Magnolia Room**

**Presenter: Valanne MacGyvers**

School: University of Louisiana at Lafayette

Advisor/Co-Authors: Christopher Veal, Krista Malley

Area of Study: Psychology

**Title: Leaders and Followers: The State of the Science**

**Abstract:**

Robert Kelly (1992) has pointed out that, while business and education have focused intense energy on the development of effective leaders, such leaders only contribute about 20% to the success of any project. It is the effective followers who actually contribute the most to creating successful outcomes. In this talk, Dr. MacGyvers will overview the research in leadership and followership and provide a context for the presentation of two empirical studies on leadership and followership in college students. Leaders are people who can “turn plans into actions,” “take the initiative,” and “know how to get people involved.” They are decision makers. The idea and importance of leadership is evident in that there are several measures of leadership in the International Personality Item Pool (IPIP) available to facilitate research. In contrast, there is no single measure of Followership, and the measure used in the research presented here was cobbled together from various items in the IPIP. Good followers are those that “support their teammates,” “are supportive of those in leadership roles,” “who try to follow the rules,” and “are able to work independently toward group goals.” What research is showing today, is that a good leader is often seen as good, not on his or her own merits, but on the quality of the people who follow them, who do the work, who realize the goal. In addition to reviewing the science of leadership and followership, we will also look at some background research on mindset and on the effects of parental behaviors. This talk will provide the context for the talks presented by Christopher Veal and Krista Malley, two undergraduate researchers. It is a package presentation.

**Presenter: Krista Malley**

School: University of Louisiana at Lafayette

Advisor/Co-Authors: Valanne MacGyvers, Christopher Veal

Area of Study: Psychology

**Title: What Makes for Good Leaders and Good Followers**

**Abstract:**

The data presented here was gathered in 2015, but these analyses are new. A sample of 155 incoming freshmen completed an extensive questionnaire with about 15 distinct constructs, including Mindset and Leadership and Followership. As in the study discussed by Christopher Veal, in this data we also found a significant relationship between Mindset and both Leadership and Followership. We also found a number of other factors predicted stronger Leadership and Followership scores. Some of these include strong learning goals, feeling that high school prepared them for college, having clear goals for one’s future, college readiness in general, being emotionally mature, being able to manage negative feelings and stress. In addition, several measures of connectedness or belongingness were associated with leadership and followership, including a connection to this university, and a sense of belonging in general. Several concepts related to a solid work ethic were associated with leadership and followership, such as a basic understanding of the financial issues related to attending college, the number of hours one worked and the number of hours one studied. One of the more interesting findings

was that these work ethic measures were actually better predictors of being a good follower. Indeed, the hours worked, and the hours studied, were only related to followership. Data analyses are presented for all of these results, and together with the findings from Veal's talk, we find that in general, college life prepares us well to be good followers, outstanding team players and to have concern and respect for others. This also prepares us to be good leaders!

**Presenter: Christopher Veal**

School: University of Louisiana at Lafayette

Advisor/Co-Authors: Valanne MacGyvers, Krista Malley

Area of Study: Psychology

**Title: Leadership is Predicted by Mindset and Perceived Parental Behavior: So is Followership!**

Abstract:

The Greek philosopher Aristotle once said, "He who cannot be a good follower cannot be a good leader," But what makes a good leader or follower? The nature position advocates "leaders are born," and is opposed by the nurture stance "leaders are made." During the feudal era, royalty was leadership determined by hereditary. Followership, on the other hand, has been perceived as a less desirable characteristic, at least until recently. Current behavioral research in psychology looks for more experiential variables like parenting, mindset, intelligence, and emotional regulation. We will present unreported data gathered a few years ago that focuses on the relationship between perceived parenting behavior, mindset (fixed and growth), and the strength of influence they have on both leadership and followership. More than 400 undergraduates completed a survey on SurveyMonkey. Leadership was assessed using ten items From the International Personality Item Pool (IPIP). A ten item IPIP-based assessment gauged followership. Mindset was assessed with the five item measure (Henderson & Dweck 1989. The Parental Authority Questionnaire (PAQ, Buri, 1991) measured perceived parenting behaviors. Regression analyses revealed that mindset is significant in predicting both leadership and followership such that the fixed mindset was associated with lower scores on both leadership and followership. Further, maternal permissiveness significantly predicted the fixed mindset. Both maternal and paternal permissiveness is related to poor followership scores and to lower leadership scores. In essence, permissive parenting predicts mindset and mindsets are significant to leadership and followership.

## **Session 1/ROOM #3**

### **Shadows Room**

**Presenter: Asija Rice**

School: Southern University and A&M College

Advisor/Co-Authors: Dr. Yadong Qi

Area of Study: Urban Forestry

**Title: A Genetic Dissection of Host Resistance to Goss's Wilt in Maize**

Abstract:

Goss's wilt (GW) of maize is caused by Gram-positive bacterium *Clavibacter michiganensis* subsp. *Nebraskensis*. The bacterium was historically confined to the Great Plains and has now spread to multiple states in the US and Canada. Understanding the genetic basis of the disease resistance will enable the development of improved corn varieties for Goss's wilt resistance.

Here, a double haploid population developed from a highly resistant inbred line and a highly susceptible inbred line was used to identify the genetic loci associated with disease resistance. We applied a simple method, clipping inoculation, to introduce bacteria to plant seedlings and quantified the disease resistant level of each double haploid line. With genome-wide genotyping data of each line, we performed quantitative trait locus (QTL) analysis, identifying a locus at the chromosome five associated with the disease trait. Further validation and fine-scale genetic mapping are needed to clone the gene responsible to GW resistance.

**Presenter: Rodney Zion Purdy**

School: Southern A&M university

Advisor/Co-Authors: Yadong Qi

Area of Study: Biology

Title: **AAS 2019**

Abstract:

The main objective Determine the quality of unreleased pepper and tomato varieties by measuring sugars & taste respectively. This will help develop me into my role as a plant specialist with NRCS. The Vegetables that are being grown are special varieties know as All American Selections. America Selections Started in 1932, by Ray Hasting, is an American organization which tests new varieties of seed for use in gardening, and promotes those who have the best quality, by Horticulture professionals. My program contributes to the AAS trails by growing 56 different varieties of vegetables and planting in a specified plot. Further Data will be recorded in the fall regarding their quality of taste and yield.

**Presenter: Valeria Faria**

School: McNeese State University

Advisor/Co-Authors: Amber Hale, Robby Maxwell, Sean Kinney

Area of Study: Biology

Title: **Effect of Freezer Storage on *Anguilla rostrata* Gonadal Tissue**

Abstract:

The aim of this study is to determine the optimal window of time for processing delay of *Anguilla rostrata* (American eel) gonads in freezer storage, in order to ensure reliable histological analysis. In field studies, there is often a significant delay between collection and processing dates of tissues which can cause severe damage to the samples due to long periods of freezer exposure. In a previous study, eels were caught throughout the state of Louisiana with the purpose of assigning sex, and many of those eels were in frozen storage for an extended period of time. When the histology of the gonads was analyzed, there were significant artifacts due to tissue damage. A qualitative analysis of the gonadal histology for this eel species was done at multiple stages of sexual development to compare the quality of ovarian structures. In total, fifty-three eel gonads with varying delay times were thoroughly inspected to rank the quality of these cellular structures. A scoring system was developed to objectively rank the quality of the tissue for a more precise conclusion. It is worth noting that conclusions from this study have a wide range of applications for aquatic studies and are not limited to eel tissue.

## **Session 1/ROOM #4**

### **River Room**

**Presenter: Jaquinta Graves**

School: University of Louisiana at Louisiana

Advisor/Co-Authors: Dr. Gregory Davis

Area of Study: Kinesiology

Title: **Protein Consumption and Body Composition**

Abstract:

This is a descriptive exercise physiology study that will provide general descriptive information about people in terms of the composition of one's health. The testing instrument, the BodPod is an Air Displacement Plethysmograph (ADP) that is highly accurate. The data received will be used to place participants into category subgroups relative to how much composition of protein is used in their diet, relative total mass to fat mass, and overall BMI.

**Presenter: Aaliyah Augustus**

School: Southern University A&M College

Advisor/Co-Authors: Dr. Melissa Johnson

Area of Study: Family & Consumer Science

Title: **College Student's Eating Behavior and Attitudes**

Abstract:

During college, student's eating habits and attitudes about food and nutrition are often unhealthy. The goal of this pilot study was to examine select eating habits and attitudes of college students. A convenience sample of 88 students, enrolled in nutrition courses at Southern University and A&M College, were recruited for participation. Using an online survey, we collected data regarding student dietary behaviors, attitudes towards health and disease, and demographic characteristics. The majority of the participants were female (96%), between the ages of 19 and 21 (58%) and were college sophomores (42%). Over seventy-five percent indicated that they were either very concerned (44.3%) or neither concerned nor disconcerned (43.2%) about their diet. Most students indicated that they consumed processed meats at least 2 to 4 times per week (37.5%), consumed fruits 1 to 3 times per month (35.6%), and vegetables 1 to 3 times per week (43.9%). Lastly, nearly half of the students indicated that they consumed convenience foods at least once per week (23.9%) or 2 to 4 times per week (23.9%). Our findings indicate that there is an opportunity to improve the eating habits and attitudes of college students. This in turn may promote better eating habits and positive attitudes about nutrition and health and potentially lower risk for chronic disease later in life.

**Presenter: Sydney Becker**

School: University of Louisiana at Lafayette

Advisor/Co-Authors: Professor Lynn Funkhouser; Dr. Charles Brassieur

Area of Study: Anthropology

**Title: An Ethnohistorical Approach to Disease Causation and Healing Methods of the Florida Seminoles**

Abstract:

This research investigates mechanisms of disease causation and methods of healing among the Miccosukee Seminoles and contrasts their ethnomedical system to those along Bayou Teche recorded in the Bienvenu Thesis. A holistic examination of ethnographic and ethnohistorical documentation, this research also investigates the influences of adopted Christianity and the broader biocultural consequences of contact, migration, and fusion on Native North American health outcomes and healing practices. The contemporaneous use of specific botanical elements found across distinctive cultural groups suggests a shared belief in the healing properties and symbolism of certain flora. The emphasis of this research being on vegetation commonly referred to as elderberry and red bay. Variation in culturally-bound notions of health and sickness is also markedly evident, reinforcing that Native North Americans of the southeastern woodlands are far from static, or vanished, cultural entities.

## **Session 2: 10:00 AM – 11:15 AM**

**2 Presenters = 30 min./each**

**3 Presenters = 20 min./each**

**4 Presenters = 15 min./each**

### **Session 2, ROOM #1**

#### **Pelican Room**

**Presenter: Maxwell Kane**

School: University of Louisiana at Lafayette

Advisor/Co-Authors: Dr. Ross Chiquet, Dr. Amy Veprauskas, and Dr. Logan Perry

Area of Study: Mathematics

**Title: The dynamics of a discrete, age-structured amphibian population model**

Abstract:

The study of amphibian populations, particularly in response to various environmental and epidemiological stressors, is an area of active research in bio-mathematical modelling. In particular, there is great interest in analyzing the dynamics of populations impacted by the bacteria *Batrachochytrium dendrobatidis*, a deadly infection which has destroyed many frog

populations in recent years. This project seeks to analyze and quantify the dynamics of a discrete-time, age-structured model of one affected species, *Rana muscosa*. Included are the calculation of the inherent net reproductive number, proof of the existence of a disease-free equilibrium, the stability of that equilibrium, and sufficient conditions for the permanence of the disease-free population. There will also be an investigation into the impacts of Bd on the characteristics of the population.

**Presenter: Deidre Henderson**

School: Grambling State University

Advisor/Co-Authors: Naidu Seetala

Area of Study: Mathematics and Physics

Title: **Magnetization and Crystal Structure of Heat Treated SmCo Powder**

Abstract:

In recent times, there has been an increase in the research of Samarium Cobalt (SmCo), due to its strength and structure which makes it ideal for use as a feedstock for additive manufacturing of miniature electromagnetic applications by 3D printing. In our study, the magnetization and crystal structures of commercial SmCo powder was analysed after being reduced or vacuum annealed. Our initial studies on laser heat treated powders showed an increase in magnetization, while the coercivity decreased significantly. Oxidation during heat treatment is assumed to be the cause for low coercivity. To minimize the oxidation, the powder was reduced using a constant flow of hydrogen gas while being heated at various temperatures from 100 °C to 400 °C for a period of 4 hours. Secondly, samples were also annealed in a vacuum furnace for one hour at temperatures between 200 °C and 400 °C in order to confirm that no hydride phases was formed during reduction. The magnetization and coercivity showed similar variations with temperature to the reduced powders confirming that these variations may be due to change in crystal structure rather than formation of hydrides. X-ray Diffraction (XRD) studies are performed to identify the changes in crystal phases.

\*The research is supported by NSF EPSCoR CIMM project under award #OIA-1541079.

**Presenter: Nicholas Mayon**

School: Nicholls State University

Advisor/Co-Authors: Darcey Wayment

Area of Study: Chemistry and Physical Sciences

Title: **Ultrasonic Degradation of Metribuzin**

Abstract:

Metribuzin is a widely used herbicide that is commonly used in agriculture to control broadleaf and grassy weed species. Like other triazine herbicides, there is concern about its persistence in the environment and its potential to contaminate surface and ground waters. The sonolytic removal of this herbicide from wastewater was investigated in this study. Metribuzin in aqueous media was subjected to ultrasound using different sources; a low power cleaning bath and a 20 kHz probe type horn. Enhanced rates of metribuzin degradation occur with both systems. Degradation rates significantly increased using the 20 kHz probe type horn. With metribuzin decreasing by 94.7% in 4 hours with a 50% amplitude. The same results could be

completed in half the time using a 100% intensity on the sonochemical probe. High-Performance Liquid Chromatography (HPLC) and Gas Chromatography Mass Spectrometry (GCMS) were used to analyze the sonicated solution for metribuzin levels and degradation products. The decrease in metribuzin concentration resulted in the formation of the metabolites deaminated (DA) diketometribuzin (DK) and deaminated diketo-metribuzin (DADK). Other peaks formed in the HPLC results are being investigated to identify other potential metabolites. The rate constant found for the degradation appears to fit a first order reaction model. Spike recoveries for the HPLC method ranged from 98% - 112%. The optimum experimental conditions, as well as rate constants of the degradation will be presented.

## **Session 2, ROOM #2**

### **Magnolia Room**

**Presenter: Jessica Criddle**

School: University of Louisiana at Lafayette

Advisor/Co-Authors: Dr. Michael McDermott

Area of Study: Psychology

Title: **Anxiety and Physical Wellbeing: Examining the Mediating Role of Anxiety Sensitivity**

Abstract:

Numerous psychological, medical, and multidisciplinary studies demonstrate that anxiety adversely affects physical health and well-being. For example, anxiety disorders are associated with a wide array of health concerns. Although this relation is well-established, less is known about the cognitive and emotional factors that may underlie the effect of anxiety on physical health. One potential factor relevant to this relation is anxiety sensitivity.

Anxiety sensitivity (AS) is the fear of interoceptive sensations commonly associated with anxiety and the belief they will lead to aversive physical, cognitive, or social consequences [9]. Studies thus far support the role of AS as an underlying mechanisms by which anxiety, and an array of other emotional and behavioral disturbances, may be related to a variety of health concerns such as pain. However, further exploration of the role AS in the effect of anxiety on physical health and overall wellness is needed. To address limitations, the current study sought to examine possible underlying mechanisms, or mediation, facilitating the strong correlation between anxiety and health concerns by analyzing the role of AS in this relationship.

**Presenter: Megan Fowler**

School: University of Louisiana at Lafayette

Advisor/Co-Author: Dr. Amy Brown

Area of Study: Psychology

Title: **Perceived Social Reactions and Their Effect on Disclosure Recommendations for Sexual Assault Victims**

Abstract:

Because negative social reactions can be harmful for sexual assault victims' recovery and disclosure processes, it is important to understand how social reactions influence others' impressions of victims. Thus, this study aims to understand if individuals' opinions about survivors will be influenced by others' reactions. 282 college students read one of three vignettes varying the types of reactions a sexual assault survivor expects to receive from family members and answered questions about their opinion of what the survivor should do. Participants also completed a rape myth acceptance questionnaire. There were no overall significant findings. However, we did find a strong positive correlation between rape myth acceptance and victim blame ( $r = 0.50$ ).

**Presenter: Ra'Lisa Smith**

School: Southern University and A&M College

Advisor/Co-Author: Dr. Samii Kennedy Benson

Area of Study: Family & Consumer Sciences

Title: **Utilizing Mardi Gras Museum Collections in Understanding the Elements and Principles of Design**

**Abstract:**

Mardi Gras holds significant importance for the city of New Orleans, Louisiana. Its customs include the use of signature colors (purple, green and gold), parading organizations (krewes, tribes and troupes), cotillion balls and masquerading among other traditions, events, festivities (Gotham, 2012). Popular in New Orleans since as early as the 1830s, masquerading is one of the more prominent customs which involves the wearing of elaborate masks, wigs and costumes by participants (Cohen, 1951). The most extravagantly designed costumes are worn by members of the parading organizations to the themed parades and/or balls that are held throughout the carnival season. Thousands of dollars and countless hours go into the creation of Mardi Gras costumes. Due to their intricacy, the costumes can take up to a year to create and to fit the organizations ever-changing themes, new costumes must be produced each year. In the same fashion as contemporary artists and designers, Mardi Gras costumers utilize various art and design techniques in their work. In addition to their aesthetic beauty, Mardi Gras costumes can serve as useful educational resources for novice fashion students in understanding the elements and principles of design. The purpose of this research was to engage students in understanding the elements and principles of design through the exploration of Mardi Gras museum collections. More specifically, this research asked: a) How did the museum collections help in understanding the elements and principles of design? Students toured the Mardi Gras costume collections housed at two museums located in New Orleans, The Mardi Gras Museum of Costumes and Culture and The Presbytere Museum. During each visit, students were asked to record their observations in the form of notes, photographs, sketches and artifacts. The student's reflections revealed a greater understanding of the elements and principles of design through this enhanced learning experience.

## **Session 2, ROOM #3**

### **Shadows Room**

**Presenter: Valeria Nolazco**

School: Nicholls State University

Advisor/Co-Author: Taylor Assad, Michael Bartnik, Jason Ladd

Area of Study: Music

**Title: A Progression of Modern Jazz Through The Analysis of The Saxophone in Select Jazz Standards**

Abstract:

Almost immediately after Arnold Schoenberg broke away from the constraints of tonality in Europe, modern jazz pioneers in America were breaking away from the limitations of conventional theory and form. Jazz defied convention in its own right in the grand scheme of Western music, but the early 1940s began the era of truly modern jazz. Sanford M. Helm, the author of "Jazz: Music In Miniature" gives insight into the parallels occurring in jazz music and serious music. He suggests that within a fifty-year period, jazz music developed in the same way that serious music developed within 200 years. An analysis of modern jazz through the progression of the saxophone in its music gives a perspective of one of the newest of jazz instruments in one of the newest of musical genres. After extensively researching the history of jazz music, I picked jazz standards in each style of modern jazz, focusing on those important to saxophone as well as making sure to use saxophone giants on each of the four primary saxophones (soprano, alto, tenor, and baritone). The project highlights findings in the different styles of modern jazz through the vantage point of jazz standards written or played by saxophonists. This includes historical connections within the genre, the impacts that each style had on the one that superseded it, the contributions the saxophone figureheads made to the genre, the analysis of the forms and melodic lines of the selected pieces, and the implications that the findings made for future expansion of the modern jazz genre.

**Presenter: Amanda Gildersleeve**

School: University of Louisiana at Lafayette

Advisor/Co-Author: Christopher Bennett

Area of Study: Visual Arts

**Title: Secular Treatment of Adam and Eve by Bosch and Rodin**

Abstract:

The text discusses how Hieronymus Bosch's Garden of Earthly Delights (1500) and Auguste Rodin's Adam and Eve (1880-81) were treated secularly by their respective artists. The subject of Adam and Eve has an inherent religious tone. However, these works reflect the couple as human beings with emotions and connects to the Earth, not the founders of sin. Rodin's Adam and Eve are finding the uniquely human feeling of persistence and hope. They are experiencing self-reflection and grounding themselves by the Earth. Bosch cannot fathom human ever existing without sin, so his Eden has hints of it long before the snake or apple make an appearance. As artists, Bosch and Rodin knew the importance of sin and its relationship with

human nature. Without sin there would be no humanity, so they decided to take the origin of their muse and convey it in a way that was more truthful to their experiences.

**Presenter: Franziska Riepl**

School: University of Louisiana at Lafayette

Advisor/Co-Author: Dr. Heath

Area of Study: Economics & Finance

Title: **The Response of Labor Unions to Universal Basic Income**

Abstract:

Basic Income is a concept that has been receiving more and more attention over the past years as an alternative to the current employment-based welfare systems and as a possible solution for a world where automation reduces the number of available jobs. Support comes from various groups on the left, which embrace the idea of an unconditional basic subsistence guarantee that gives everyone the freedom to choose their own way of life, and from libertarian-leaning groups that advocate for a much simpler, streamlined welfare system. Labor unions are often overlooked in this debate, yet they hold a somewhat surprising, but insightful position. Most labor unions reject basic income on the grounds that it will not deliver the expected positive effects, such as increased wages, decreased unemployment and more personal freedom, while bearing the risk of being used to dismantle the welfare state and lower government support. Furthermore, UBI contradicts the traditional values of unions and is seen as a threat to their power. This paper will take a closer look at these concerns that labor unions bring forward to analyze where they come from, whether they are economically justified, and how these criticisms could possibly be addressed when designing basic income policies.

## **Session 2, ROOM #4**

### **River Room**

**Presenter: Bailey Lemoine**

School: University of Louisiana at Lafayette

Area of Study: History

Title: **The First Red Scare in New Orleans: Newspaper Coverage of National and Local Labor Issues in the Times-Picayune**

Abstract:

The first Red Scare in 1919 was a period of intense fear and suspicion of radical leftist activity in the United States following the Bolshevik Revolution of 1917 and the end of World War I in 1918. Fear took shape in the form of government and public action and condemnation of aliens, immigrants, and labor movements. Most papers reporting on the Red Scare and labor strikes in 1919 were characterized by fear and xenophobia. The Times-Picayune did not demonstrate the same intensity of this fear until an increasingly damaging series of local strikes coincided with important labor strikes in other parts of the country in the fall of 1919. Even as reporting on labor issues in the Times-Picayune began to express the language of fear found in other papers

during these local strikes, its reporting continued to attempt an appearance of neutrality until the Armistice Day incident in Centralia, Washington. The reporting and editorials in the Times-Picayune show the atmosphere of New Orleans during the first Red Scare and demonstrate how and when the city participated in the Scare.

**Presenter: Sophia Cefolia**

School: University of Louisiana at Lafayette

Advisor/Co-Author: Dr. Kinzie Hall

Area of Study: Political Science

**Title: Breaking the Glass Ceiling: Explaining the Shift to Gender-Neutral Statutory Rape Laws**

**Abstract:**

Conventional wisdom would indicate that progressive movements create progressive legal reforms. That being said, in this paper, we explore situations in which progressive reforms may be influenced by other factors. More specifically, was the 1970s liberal feminist fight for equalization under the law a catalyst for states to shift to gender-neutral statutory rape laws? In this paper we argue that, while critical, the feminist movement cannot be fully credited with the reform of language in statutory rape laws. Gender-specific statutory rape laws have the unique factor of being constitutionally affirmed by the Supreme Court in Michael M vs Superior Court (1981) and were not fully reformed until Idaho changed their statute in 2016- nearly four decades after the height of liberal feminist reform, indicating that other factors may have led to these changes. In this paper, we evaluate the political dynamics in the states that switched from gender-specific statutory rape laws to gender-neutral laws and argue that these shifts were not motivated by liberal feminist ideals that motivated states in previous years, but rather stemmed from a conservative, punitive agenda. We demonstrate this using a novel dataset which captures the shifts in language in statutory rape laws from 1981 to 2016 and the political factors in the state at the time of the shift. We also evaluate the likelihood a state only punishes opposite sex statutory rape or if the gender-neutral shift also includes a shift to include same sex statutory rape.

**Presenter: Mary Pritchard**

School: University of Louisiana at Lafayette

Advisor/Co-Author: Dr. C. Ray Brassieur

Area of Study: Anthropology

**Title: 20th Century Black Education in South Louisiana**

**Abstract:**

Education opportunities for non-whites in South Louisiana, before 1955 were very limited and until 1965 most schools were segregated. 20th Century Black Education in South Louisiana is an ongoing oral history project that explores education of black and other non-white students from segregated schools through the desegregation of schools in Lafayette and surrounding parishes. The researcher was intrigued by the topic of desegregation in Lafayette Parish schools due to being bussed to a new school as a third grader in 1973 because the district had not met the quota for desegregated schools. Common themes discovered through a number of

one on one interviews involve advocacy for non-white students, the process of desegregation from the perspective of the student, differences between historically black universities and traditionally white universities and the experience of siblings across the years. Through in person, recorded interviews the student researcher found that no matter the education level of the parents of the interviewee or their age, segregated schools offered advocacy and support for students that early desegregated schools did not which leaves an opening for further investigation into current educational opportunities for non-white students today. This research includes only non-white interviewees who attended only segregated schools or who transitioned from segregated schools to desegregated schools during the Civil Rights legislation of 1964. This presentation will include excerpts from audio recordings of the seven interviewees.

**Presenter: Jace LeCompte**

School: Nicholls State University

Advisor/Co-Author: Jay Udall and Scott Banville

Area of Study: Languages and Literature

Title: **Three Voices of the American Dream: King, Harjo, & Lee**

Abstract:

Martin Luther King Jr., Joy Harjo, and Li-young Lee's works tackle issues of community, spiritual guidance, and legacy or what we pass down to our children. All these writers' works are based on what their version of the American Dream is. King, Harjo, and Lee's American Dreams are all influenced by where they came from and their cultural backgrounds. All three of these writers are minorities and came from varying backgrounds—African American, Native American, and Chinese Immigrant. King wanted to make a future where "Separate but equal" and Jim Crow laws don't exist. Harjo wanted to find her place in the world due to her feeling misplaced due to her mixed racial heritage—Muscogee, Cherokee, French, and Irish. Lee wanted to live a better life by immigrating to America in the 1960s while at the same time honoring the spiritual guidance of his Indonesian Chinese father—a struggle that would go on to define the American immigrant experience of the late 20th century. The American Dreams of these authors all hinge upon a sense of community, the methods they use to obtain their dreams is done through spiritual guidance, and after they obtain their dreams, they leave behind their legacy. All these writers envisioned an America that was interconnected with their past, but not enough that it made it harder to move on to a brighter future—a future without racial discrimination and one with people who have a deep spiritual connection with their forbearers.

**LUNCH: 11:30 AM – 12:45 PM**  
**Atchafalaya Ballroom**

**Session 3: 1:00 PM – 2:15PM**

**2 Presenters = 30 min./each**

**3 Presenters = 20 min./each**

**4 Presenters = 15 min./each**

**Session 3, ROOM #1**  
**Pelican Room**

**Presenter: Abigail Lowery**

School: University of Louisiana at Lafayette

Area of Study: History

Title: **Photomontage and Photography: Snapshots of Social Turmoil**

Abstract:

Crowded compositions and juxtaposed images are key themes within both Hannah Höch and Laurie Simmons' photomontage pieces. Appropriated images from various advertising sources are used to disfigure and create masterful images of "modern" women in Höch's *Das Schöne Mädchen/The Beautiful Girl* and Simmons' *The Instant Decorator (Yellow Kitchen)*. Ever-changing ideas of modern society have led to many radical changes in the lives of women around the globe. Constant social changes brought on by both war and peace left many generations of women to feel unsure of their place in society. Hannah Höch's *Das Schöne Mädchen/The Beautiful Girl* showcases the changes in German female identity following the end of World War I, while Laurie Simmons' *The Instant Decorator (Yellow Kitchen)* highlights common tropes of American womanhood after third wave feminism in the early 1990's. Höch and Simmons' use of print advertisements within their photomontages focuses on the mistreatment and sexualization of women in the media. While Hannah Höch and Laurie Simmons are nearly eighty years removed from one another, each artists' works choose to highlight social issues that have plagued women around the world for decades. The desire to drive conversation and social change through art is a uniting and powerful force in the works of both Laurie Simmons and Hannah Höch.

**Presenter: Kris Plunkett**

School: Louisiana State University

Advisor/Co-Author: Dr. Gaines Foster

Area of Study: History

Title: **Lest We Forget: Modern Defenders of Confederate Monuments**

Abstract:

Amid today's controversy over Confederate monuments, arguments defending these symbols of the Confederacy are often rebutted but rarely analyzed. Many groups argue for historical preservation, falling back on the assertion that to remove even the most offensive monuments is to pretend that part of history never happened. The older Confederate memorial organizations appear to be less radical than the newer, more reactive groups, though there is a significant overlap in membership. Some organizations, such as the United Daughters of the Confederacy and the Sons of Confederate Veterans, have erected and preserved Confederate monuments since the mid-19th century. Their primary arguments in favor of preserving monuments usually stem from an incredibly sympathetic historical interpretation. Such groups claim the original intent of Confederate monuments was only to honor those who fought, and that misinterpretation of history causes people today to be offended. This often bleeds into another argument: that the Confederacy fought for states' rights – not slavery. These older organizations assert that an "accurate" historical interpretation proves that Confederate monuments give no cause for offense. Newer organizations, such as Save Southern Heritage, have emerged in response to the growing movement against Confederate symbols. These groups tend to have more extreme views about contemporary efforts to remove Confederate monuments. They allege the monuments were never intended to be symbols of white supremacy and that those "offended" persons actually seek to undermine American values with overzealous political correctness. These allegedly under-attack values are not well defined beyond the right to free speech. The defining characteristic of these new Confederate groups is that they go beyond defending monuments themselves to attacking those who oppose the monuments. These more extreme groups appear to form epistemic bubbles that reject any information that originates outside their own communities.

**Presenter: Charles Charrier**

School: Louisiana State University

Advisor/Co-Author: Jerry Sanson

Area of Study: History and Political Science

Title: **"Thanks a Million, for Six Million Guys" - The Story of the North Platte**

**Canteen**

Abstract:

For over seventy-five years, historians have regarded the North Platte Canteen as being the best representation of what was being done on the American home-front during World War II, and one of the country's finest moments of generosity in a time of need. From its origins from a mistaken case of small-town gossip, one woman's call to action inspired an entire state to show passing servicemen how much they appreciated the ultimate sacrifice the soldiers were making. When the vision saw manifestation, the canteen saw over six million servicemen being served a

unique brand of compassion of the course of four and a half years. And in the process, the sacrifices and traditions volunteers made helped develop the canteen's reputation and created a legacy that would endure for the coming generations.

## **Session 3, ROOM #2**

### **Magnolia Room**

**Presenter: Victoria Rapp**

School: Loyola University New Orleans

Advisor/Co-Author: Dr. Kelly Frailing and Dr. Rae Taylor

Area of Study: Criminology and Justice

Title: **Swift and Certain Implementation**

Abstract:

While HOPE and HOPE-like programs have received a good deal of attention in the literature lately, what appears to be missing from those investigations is thorough descriptions of the programs and to what degree the programs have been implemented with fidelity to the HOPE model. This study describes one such program, the Swift and Certain Probation program in Jefferson Parish, and the degree to which it was implemented with fidelity. We observed the Swift and Certain Probation program for three years and found that it is implemented with fidelity across the key elements of HOPE, and we propose explanations for our findings from the process evaluation that are consistent with the key elements. We conclude with recommendations for both the implementation and evaluation of HOPE and HOPE-like programs.

**Presenter: Jennifer Brescher, Darren Quiett**

School: Southeastern Louisiana University

Advisor/Co-Author: Dr. William A. Chernoff, Tori Rodriguez, Rachel Perkins, Olivia Billot

Area of Study: Sociology and Criminal Justice

Title: **Comparing Racial Perceptions of Marijuana Use among the Next Generation of Criminal Justice Professionals**

Abstract:

The War on Drugs has viewed marijuana as a major threat to public safety and directed countless dollars toward "Getting Tough" on its sale, distribution and use. Research on the use of marijuana suggests there is no typical marijuana user and that usage rates are almost equal among White and Black individuals. Nonetheless, Black people are three times more likely to be arrested for marijuana related charges. These trends have led some to view efforts against marijuana as contributing to the negative stereotyping and criminalizing of people of color. While much research exists showing differences in arrest, the factors which contribute to these trends remain surprisingly under studied. What we want to know is: How do the racial perceptions of the next generation of criminal justice professionals vary when it comes to substances like marijuana, tobacco and alcohol? The sample in this study consists of criminal

justice students who were randomly shown vignettes pertaining to either marijuana, tobacco or alcohol. These students were then asked to draw pictures of the suspects committing the offenses described, using crayons of different skin tones. We hypothesized that students who received a marijuana survey would be more likely to use a darker shade skin tone compared to students that received a tobacco or alcohol survey. In addition to studying this racial bias effect, we surveyed the students about their race, political party preference and media intake to better understand how these factors contribute to perceptions of race and crime.

**Presenter: Tori Rodriguez, Rachel Perkins, Olivia Billiot**

School: Southeastern Louisiana University

Advisor/Co-Author: Dr. William A. Chernoff, Jennifer Brescher, Darren Quiett

Area of Study: Sociology and Criminal Justice

Title: **The Effects of Gender and Media on Fear of Crime on University Campus**

Abstract:

The number one factor predicting whether someone will be a victim of crime is whether or not they were raised and identify as a man. While self-report and police records show men are more often the victims of crime, women report greater levels of fear of victimization, producing what social scientists call the gender-crime paradox. This social arrangement is problematic for both women and men. For women, it means unnecessarily experiencing feelings of stress and anxiety, in addition to wasting valuable time and attention thinking about crime and safety. For men, it means greater victimization and needlessly promoting opportunities that permit harm. It is this paradox that led us to consider the following research questions: 1) What impact does gender have on feelings of fear of crime? 2) What effect does prior victimization have on these differences? and 3) To what extent does crime media influence these feelings for women and men. To better examine these questions, we sampled 61 students at Southeastern Louisiana University and surveyed their perceptions on crime, safety, and prior experiences with victimization. Consistent with the gender-crime paradox, women reported higher levels of fear of crime than their male counterparts. No significant gender difference was observed, however, for reports of prior victimization. In addition to observing partial support for the gender-crime paradox, we examined the effect that crime media has on this gender and fear of crime. The survey results suggest that women and men who consume more crime media experience higher levels of fear of crime. Notably, this effect explains some of the difference in gender, but not all of it. While it is too soon to claim crime media is to blame, these findings support the connection between crime media, gender, and fear of crime.

**Presenter: Ruben E. Smith**

School: Northwestern State University

Advisor/Co-Author: Dr. J. Ereck Jarvis

Area of Study: Film Studies

Title: **"The Crime You See Now": Adapting Politics and the Western Genre into No Country for Old Men**

Abstract:

No Country for Old Men (2007) is a genre-hybrid film, blending neo-noir and Western conventions, while also serving as an adaptation of Cormac McCarthy's novel. The film and

novel tackle various political and social issues. I will show how different means of adaptation interact in the film, particularly regarding the figuration of crime and violence within society.

## **Session 3, ROOM #3**

### **Shadows Room**

**Presenter: Catherine Conn**

School: Grambling State University

Advisor/Co-Author: Dr. Reddy, Gary White

Area of Study: Computer Science

Title: **Ethical Hacking**

Abstract:

The project aims to teach the principles and basics of cyber security, specifically ethical hacking, to a society where cyber security needs are growing daily. An ethical hacker can be defined as an individual that hacks into a computer in order to tests its security, as oppose to doing so with malicious intent. Securing information has become one of the biggest challenges in information technology and is relevant to anyone who has a computer. The project explores a number of security programs through Kali Linux, a Linux distribution operating system designed for penetration testing. Through using programs from the terminal such as NMAP, John the Ripper and Metasploit, we find information about the target computer including IP addresses, location and passwords. Beyond this we look into the certifications it takes to become an ethical hacker, the jobs they can do; penetration testing which is an authorized attack on a business to test its security, and the responsibilities entailed with these positions.

**Presenter: Mustapha Yoosuf-Akinlaja**

School: Grambling State University

Advisor/Co-Author: Dr. Prasanthi Sreekumari

Area of Study: Computer Science

Title: **Predictive Modelling of Gender Classification with Caret**

Abstract:

Supervised classification is one of the tasks most frequently carried out by the intelligent systems. This project focuses on predicting gender classification with caret package. The created model predicts the classification of gender from height and weight measurements. We use the metric of accuracy to evaluate the model with simple linear, nonlinear and complex linear methods. The weight and height dataset was used for classification with 10,000 instances with three attributes. The dataset provides the weight, height and gender of the person. The result shows that Linear Discriminant Analysis was found to be the algorithm with most precision and accuracy.

**Presenter: Rhea J. Xavier**

School: Grambling State University

Advisor/Co-Author: Dr. Prasanthi Sreekumari

Area of Study: Computer Science

**Title: Cancer and Cyberbullying: Monitoring and Analysing Data from Social Media**

Abstract:

Cancer and cyberbullying, although may be initially considered very different, have both been a matter plaguing our society within the last decade. But could the rise in technological advances and social media be a contributing factor to the social effect of them? Could an increase of bullying via social media be directly related to a rise in diseases and illnesses? In an article posted on Coalition Against Childhood Cancer, in June 2019, there have been more cases of this than initially anticipated and is a painful topic to discuss within support group since as it is related to the physical side effects of the treatment. In fact in a research conducted, children with cancer are 60% more likely to be bullied than their healthier counterparts. Throughout this project, there will be careful monitoring and a detailed investigation of the two topics: Cyberbullying and Illness, and the correlation between them through varying social media platforms.

### **Session 3, ROOM #4**

#### **River Room**

**Presenter: Kenneth Darcy, Christopher Barron, Nicholas Moldovsky**

School: Northwestern State University

Advisor/Co-Author: Caleb Vining, Holden Rivers, Daniela Forero Salcedo

Area of Study: Engineering Technology

**Title: Computing with Minimum Fundamental Logic Operations**

Abstract:

In this research, a fully working Encoder, Adder, and Decoder were designed and built utilizing basic logic gates. With a focus on optimization, the team derives a new method of implementing a Full Adder that makes use of fewer operations in comparison to the standard implementation. By combining the Encoder, Full Adder, and Decoder components, one can demonstrate the mechanism of computing that many electronic devices use today. This paper is significant in that it explains the entire process from conception to implementation. The explanation of this process is significant in that there are few guides to constructing these components that go this in-depth. The main purpose of this paper is to act as a guide to the reader so that they could go through the entire process and understand it with certainty. This would act as a stepping stone for most others to be able to understand fundamental digital electronics with an emphasis on the importance of minimizing operations.

**Presenter: Dylan Hebert**

School: University of Louisiana at Lafayette

Advisor/Co-Author: Tanvir Faisal, Matthew Viator, Austin Trahan, Austin Jackson, Souvik Chakraborty

Area of Study: Mechanical Engineering

Title: **Investigating the mechanical properties of 3D printed nested hierarchical metamaterials**

Abstract:

Cellular materials are tessellated unit cells that are used to create load bearing components with high strength to weight ratios. This type of design is similar to many natural phenomena such as honeycombs, plants, and bones. The designs in question are of first order, meaning the cells are tessellated within themselves one time. The removal of materials creates a lighter structure with good strength properties which can be desirable for numerous engineering applications. In this work, the 2D lattice of rectangular topology was tested to observe its mechanical properties under both cured and uncured resin manufacturing. The two versions of the material showed impressive load bearing capabilities with cured holding more than 1.5 times the load of uncured. Uncured, however, experienced a recovery of around 80 percent while the cured shattered in a brittle manner.





