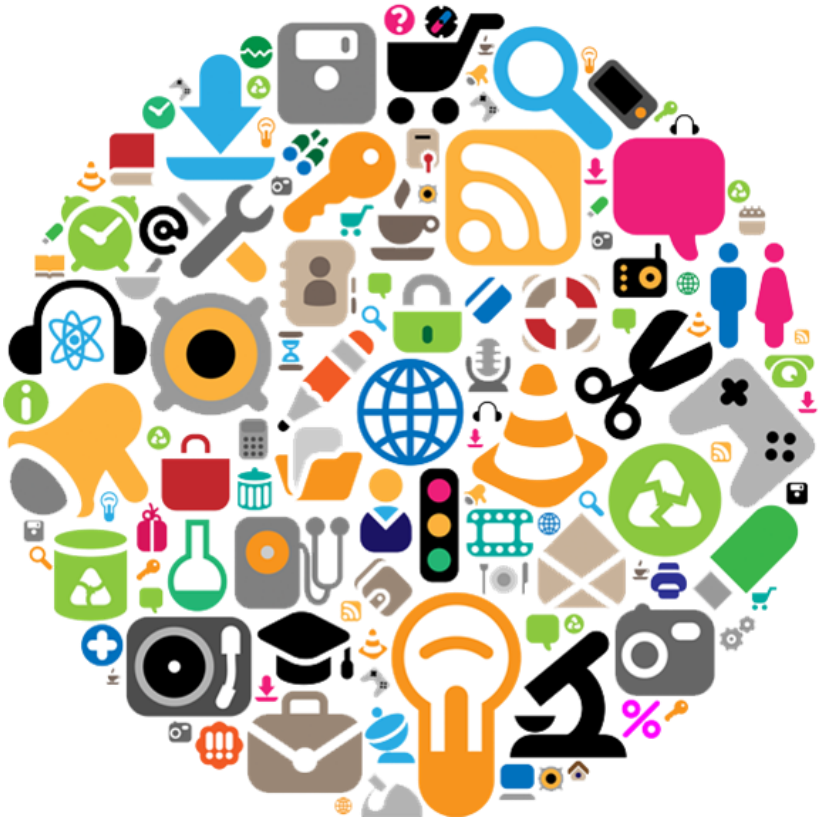
MONMOUTH UNIVERSITY | HONORS SCHOOL



The Honors School Research Conference Spring 2019

With great pleasure, the
Honors School presents its
Spring 2019 Research Conference

Students will be presenting their research in the following fields:

Biology (BY)

Business (BU)

Chemistry (CE)

Communication (CO)

Education (ED)

English (EN)

History (HS)

Mathematics (MA)

Nursing (NU)

Political Science (PS)

Psychology (PY)

Social Work (SW)

Software Engineering (SE)

SPRING 2019
HONORS SCHOOL
RESEARCH CONFERENCE SCHEDULE
Friday, April 26, 2019

SESSION 1: 8:30 a.m. - 10:30 a.m.

Opening Remarks: Dr. Nancy J. Mezey

Dean of the Honors School

Ariana Gordon, Nursing
Landon Myers, Political Science
Madeline Skultety, Psychology
Michael Venezia, Business
Dominique Connell, Political Science
Nicholas Coscarelli, Political Science
Erik Smith, Chemistry
Ryan Allen, Business
David Letcher, Business
Lia Stiles, Social Work
Julia Hoover, Business
Michael Karolewicz, Software Engineering

SESSION 2: 11:00 a.m. - 1:00 p.m.

Morgan DeWinne, English & Secondary Education
Syed Mehdi Husaini, Biology
Koushik Muralidharan, Biology
Michael Mazzucco, Biology
Pooja Shah, Biology
Allison Zalinsky, Business
Andrea Mora, Chemistry
Joseph Breen, Business
Taylor Donovan, Biology
Nathaniel Rodriguez, Mathematics
Nicole Ondrof, English & Secondary Education

SPRING 2019
HONORS SCHOOL
RESEARCH CONFERENCE SCHEDULE
Friday, April 26, 2019

SESSION 3: 1:30 p.m. - 3:00 p.m.

Haley Gasparine, Communication

Erik Wener, Business

Joseph Fay, Business

Hayley Branstrom, History & Secondary Education

Kelly Schuld, History & Secondary Education

Stephanie Bianchino, English & Elementary Education

Harry Termyna, Psychology

Monica Cortes, Business

Najah Pryor, Communication

Closing Remarks: Dr. Nancy J. Mezey

The Honors School dedicates this program to the memory of Dr. William M. Tepfenhart, a long-standing and active member of the Honors Advisory Council and a committed supporter of our Honors students. We will miss him.

Opening Remarks

DR. NANCY J. MEZEY, *Dean of The Honors School*

In Order of Presentation:

ARIANA GORDON (NU) | *Influences on Parental Decision to Vaccinate their Children*

Chief Advisor: Dr. Patricia Sciscione

The decision to vaccinate a child is ultimately made by the parent or caregiver of a child. Although school-aged children in the United States, and in many other countries, are required to be vaccinated against life-threatening diseases, some parents still choose not to vaccinate their children. A systematic review of the literature was conducted via the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Proquest Central databases to identify the factors that influence parental decisions on whether or not to vaccinate. Nine articles that met the inclusion criteria were identified and examined. Findings revealed that parents have what they believe are valid reasons for choosing whether or not to vaccinate. It is important that healthcare providers are aware of these findings so they can educate and counsel parents about the reasons behind their decision-making. In doing so, parents will be able to make the most informed choices to keep their own children healthy and maintain the health of the greater community.

LANDON MYERS (PS) | *Hope Versus Fear: An Examination of the Left-Behind Voters in Michigan and Wisconsin in the 2016 Presidential Election*

Chief Advisor: Dr. Joseph Patten
Second Reader: Dr. Stephen Chapman

This paper explores the role of the left-behind hypothesis in Michigan and Wisconsin to explain the 2016 Presidential election results. The left-behind hypothesis finds increased support for Trump in communities that feel they have been disregarded and falling behind, such as having a declining or stagnating economy and having higher mortality rates and health risks. Michigan and Wisconsin are the focus of this research as they were considered safe Democratic states and Trump's small margin of victory shocked many while putting him safely over 270 electoral votes. Using linear regression models, this research tests if the left-behind hypothesis played a role in Trump's victory within the two states. With county level data to test economic, health, and social variable's impact on the change in Republican vote share between 2012 and 2016, this research is able to find significance between the left-behind hypothesis and increased Trump support in Michigan and Wisconsin. The results provide further evidence of the left-behind hypothesis while also showing that level of education remains the largest factor in vote choice.

MADELINE SKULTETY (PY) | *It's Not Always Black and White*

Chief Advisor: Dr. Christopher Arnold
Second Reader: Dr. Jamie Goodwin-Uhler

The present study intended to look at police meta-perceptions in order to start a conversation between law enforcement and civilians. The study asked law enforcement officers about their opinions of how the community views them, with the hypothesis that the police officers would have a negative view of themselves. Contrary to the hypothesis, the police actually reported positive meta-perceptions. These findings could have been the result of a general mistrust of the researcher not being a police officer, or they could be reflective of a positive change going through the police department that increased police meta-perceptions. This study could be further extended and researched by asking the community on its perceptions of the police in order to increase growth and communication between law enforcement and civilians.

MICHAEL VENEZIA (BUBF) | *Gaining Market Share in the Hispanic Community*

Chief Advisor: Professor William Gorman

The need for greater access to higher education among Hispanic Americans is well recognized and millions of young Hispanic people cannot take advantage of the educational opportunities that are currently available. Among the barriers to greater access, financial barriers are the largest, including a lack of access to affordable financial products for college saving. These barriers are a major part of the principal problem addressed in this study highlighting the early stages of the 21st century, as financial service companies and corporations can capture this growing segment and address the needs of Hispanic consumers. This study discusses how financial service companies can do so, as marketers must challenge commonly held misconceptions, improve their understanding of the composition and culture of the U.S. Hispanic population, and devote adequate resources for research to identify opportunities within the Hispanic market. This can bolster the United States Economy and have a positive impact on big businesses and corporations.

DOMINIQUE CONNELL (PS) | *Gendering Juvenile Justice: A Content Analysis of Issue Framing and Interventions in Select Youth Justice Organizations*

Chief Advisor: Dr. Johanna Foster
Second Reader: Dr. Jennifer McGovern

Recent reports show a gradual increase in arrests for girls. Despite the growth of advocacy organizations surrounding juvenile justice reform, incarceration among girls is still an issue. Through a feminist critical criminology lens, this paper will examine what ways advocacy groups are representing girls in its narrative of youth incarceration, and in its efforts to combat youth incarceration. Previous literature and research suggest that for some time girls have been left out of the discussion when it comes to analyzing theories of crime. As more focus was given to women, theorists suggest that the path to the corrections system is different for men and women. Therefore, following a content analysis of ten advocacy group websites, this paper analyzes whether advocacy groups include girls in its narrative and solutions for incarceration. Findings show the norm to be a narrative presenting the path to incarceration the same for boys and girls alike. However, some organizations are changing the narrative and solutions to present. The results show most of these organizations are excluding girls in their narrative, and in turn these findings could provide an explanation for why there is gradual increase in arrests for girls.

NICHOLAS COSCARELLI (PS) | *How Access to Health Insurance Affects Healthcare Costs and Quality of Life*

Chief Advisor: Dr. Joseph Patten
Second Reader: Dr. Jennifer McGovern

Despite efforts to increase access to healthcare, millions of Americans are still left without protection from the economic effects of sickness because they are uninsured. Access, cost, and quality are three essential variables challenging the American healthcare system. This study examines how these three factors affect one another, in efforts to strategize improving costs by expanding access. Using data gathered from the US Census and other federal and state government agencies, this study compares these evaluated factors in all 50 states. Quality of healthcare systems were measured by analyzing outcomes of specific diseases against access variables in order to determine quality of life. Regression analysis shows an inverse relationship between rate of insured and percent of income spent on health expenditures. Partisan control in state legislatures also positively predicted insured rates, costs, and quality of life factors.

ERIK SMITH (CE) | *The Advantage of M.A.O.S. in Drug Discovery and Rapid Synthesis of Quinazoline Scoffolds*

Chief Advisor: Dr. Massimiliano Lamberto

Microwave Assisted Organic Synthesis is a novel reaction methodology that proves to be faster and more efficient than traditional synthetic methods. Long reaction times and low product yields create serious bottlenecks in drug development, but microwave heating offers a more efficient route for synthesizing quinazoline derivatives. This strategy enabled rapid synthesis of quinazoline derivatives for potential G-Quadruplex binding activity and use as EGFR inhibitors. Quinazoline derivatives were synthesized by microwave-assisted synthesis to further investigate their ability to inhibit telomerase activity and selectively bind to G-quadruplexes. Reaction conditions were established for specific quinazoline derivatives to ensure the reaction was successful and the highest possible yield was attained. Quinazoline side chains were modified to identify points for diversification in an attempt to increase inhibition efficacy and G-quadruplex binding affinity. Modifications of these quinazoline derivatives could significantly improve their ability to bind G-quadruplex structures and inhibit telomerase activity.

RYAN ALLEN (BUBF) | *Politics and Corporate America*

Chief Advisor: Professor William Gorman
Second Reader: Dr. Joseph Patten

The purpose of this thesis is to explore the increasing partisan divides in American society and what impact, if any, corporations have played in heightening political tensions through their involvement in campaign financing efforts and advertising strategies. It is not uncommon in 2019 for large companies to embrace the role of political activist by openly advocating for social change in their marketing, a strategy not pursued often in the past because of the fear of tackling controversial subjects and alienating vital target demographics. Research has examined partisanship for centuries, and partisanship has had its waves of bitterness and occasional violence throughout American history, but recent polling data is consistent in identifying a notable spike in partisanship between both major political parties and their supporters in the United States in the last several years. Numerous factors play a role, but the influence of corporations of all kinds may be shifting public opinions and creating technological bubbles upon which peoples' own biases are reinforced and where opposing viewpoints are isolated from their browsing habits.

DAVID LETCHER (BUBR) | *Technology in Investments and Trading*

Chief Advisor: Professor Thomas Holt

Technology has progressed exponentially in the past two decades leaving society with no other option than to reinvent the way in which our world operates. On a fundamental level, it appears that we are just rebuilding the wheel ten times over; regardless, it becomes the burden of society as a whole, government lawmakers, and industry leaders to keep up with the continuous progression of technology. In this instance, the securities and exchange industry has excelled greatly due to outside pressures of technological advancements. To keep up with the times, stock exchanges in particular, the New York Stock Exchange, have evolved from using chaotic and riotous trading practices into operating with the assistance of complex digitally driven strategies that are controlled almost entirely autonomously. Technology has made the classic gamble of the stock market into a high stakes series of equations and econometric models in an effort to successfully predict what lies ahead. This transformation promised unlimited potential for global markets. Most importantly, the market has become increasingly accessible to investors of every degree who interact with the market both directly and indirectly. The stock market is no longer a competition amongst people, but rather an intense rivalry between machines.

LIA STILES (SW) | *Socially Engaged Art in Social Work Practice*

Chief Advisor: Dr. Kimberly Callas
Second Reader: Dr. Sanjana Ragudaran

Mental illness and dealing with mental health in college students remains a prevalent issue on campuses across the United States. According to a recent report done by the American College Health Association (ACHA), a little over 25% of students report that anxiety has affected their academic performance (2017). At Monmouth University alone, there has been a significant increase in use of the Counseling and Psychological services between the 2016-2017 academic year and the 2017-2018 academic year – from 11% to 13% for clinical appointments. The "I am _____" Project was designed to empower participants and assist them in reframing their anxiety. Participants examine what gives them anxiety and how they cope with it during a facilitated group discussion. After identifying symptoms, stressors, and coping mechanisms, participants are then asked to think of at least one strength they possess. Once this strength is chosen, participants put this word on a t-shirt that they can wear and use as a reminder of their ability. The purpose of the project is to not only help participants reframe their anxiety, but also to create a community and a safe space for the participants during the workshops.

JULIA HOOVER (BUBK) | *Viral Content in Social Media Marketing*

Chief Advisor: Dr. Walter Greason
Second Reader: Professor Desiree Dighton

As social media platforms expand, it is important to understand the influence social media content has on consumers' behaviors. This study examines the role that influential Twitter users demonstrate in spreading popular messages through viral content. Four categories of users were observed: brands, educators, celebrities, and influencers. A ratio was generated for each user in these categories, based on content interaction by comparing a user's followers, its average likes per viral tweet, and average retweets per viral tweet. Ratios greater than 1 indicate a stronger viral effect than ratios less than 1. This measure reveals strategies for corporate brands and educators to achieve viral content more effectively by emulating the tactics employed by celebrities and influencers.

MICHAEL KAROLEWICZ (SE) | *Creating a Pokémon Game with RPGMaker XP and Pokémon Essentials*

Chief Advisor: Dr. Raman Lakshmanan

In recent years, fans of Pokémon franchise of video games have shown increasing frustration with the series' lack of change and innovation over the last 20 years. The series' traditional formula and child-friendly difficulty has started to overstay its welcome. As a result, fans of the series have turned to making and sharing their own games in order to fill this void. The objective of this thesis is to design and develop a new advanced level Pokémon game for fans of the series. Pokémon Astra is a game developed using the Pokémon Essentials community made plugin of the RPGMaker XP game creation tool. The game uses assets originating from the official Pokémon games, community resources, as well as some original assets. Pokémon Astra is significantly more difficult than the official Pokémon games as a result of two major progression changes, the "No Turning Back" system and a variable level cap on the player's Pokémon. The "No Turning Back" system prevents players from leaving areas they haven't yet cleared to heal their Pokémon whenever necessary, adding a resource management aspect to battles. The variable level cap ensures that the player cannot simply increase their Pokémon's strength to a higher level than their current opponents, making every encounter a threat.

MORGAN DEWINNE (EN.EDS) | *To Be or Not to Be...That is the Necessary Question*

Chief Advisor: Dr. Lisa Vetere

Monmouth University's English Department has been pondering the elimination of Shakespeare from a required 3-credit English course for English majors. While transgression towards moving away from "literary canon" texts have pushed for classics like Shakespeare to be removed, I believe that students of English at Monmouth University must receive a minimum of one Shakespeare course, to enhance their knowledge of Shakespearean language, to understand modern-day adaptations of Shakespeare, and to teach students of English that Shakespeare is necessary to a full English literary education.

SYED MEHDI HUSAINI (BY) | *Examining the Role of Fascin in Primary Brain Cancers*

Chief Advisor: Dr. Catherine Kubera

Fascin is one of the main actin-bundling proteins found in cells, and plays important regulatory roles in cells, such as in maintaining cell-cell adhesion through cytoskeletal structures. Its role in a cell's motile and invasive properties has been well-documented along with its overexpression in cancer cell lines. Upregulation of fascin in colorectal and breast cancer cells leads to increased metastatic and invasive properties, and the protein has been implicated in gallbladder, pancreatic, and prostate cancer. Primary brain cancers also seem to have elevated fascin levels that correlate with tumor grade and aggression but are not studied to the degree of other cancers, prompting investigation to determine if fascin is an effective therapeutic target. Preliminary findings have allowed characterization of the robust fascin gene expression in brain cancer cell lines using RT-qPCR and immunocytochemistry in Neuro2a neuroblastoma and A-172 glioblastoma. We have begun to manipulate fascin expression to assess effects on cell motility using a 2D invasion assay. Using a Biotek Cytation 5 multi-mode plate reader, we have accumulated extended time-lapse imaging of cancer cell invasion across varying fascin expression conditions, which have resulted in computerized evaluations of whether fascin overexpression increases cell motility related to metastasis and invasion.

KOUSHIK MURALIDHARAN (BY) | *RNA Therapeutic Strategies to Block VEGFR2 Expression and Angiogenesis in Glioblastoma Multiforme*

Chief Advisor: Dr. Martin Hicks

Glioblastoma multiforme (GBM), a grade IV tumor of the central nervous system, is the most common malignant primary brain tumor, and has a median survival of only 14 months. Poor survival is due to a lack of efficacy in current therapies to pass the blood-brain barrier (BBB). GBM tumors are characterized by angiogenesis, which is essential for tumor growth and survival. Endothelial cells form the walls of new blood vessels, bridging the gap between the growing tumor and the established vasculature. The membrane receptor that activates tumors to recruit endothelial cells to promote neo-angiogenesis is vascular endothelial growth factor receptor 2 (VEGFR2). Changes in VEGFR2 expression to block its activation would inhibit the development of new blood vessels within the tumor microenvironment. We have designed novel therapies to bypass the BBB and deliver the genetic sequences of anti-sense RNA molecules to alter the splicing pattern and expression of the VEGFR2 transcript. Critical splice sites, enhancers, silencers and intronic polyadenylation signals within the VEGFR2 pre-mRNA transcript were analyzed using bioinformatics databases and RNA-modeling tools. Based on this, nine different antisense sequences were generated to target and block these elements and were cloned into our therapeutic platform vector, pAAV-U7-smOPT. This vector directs the antisense RNA therapeutic to the spliceosome machinery. GBM cells were cultured and transfected with the therapeutic vectors, and the total protein and RNA was collected and analyzed. A172 and U87 GBM cells treated with antisense therapy revealed a greater than two-fold reduction of VEGFR2. Current directions include direct delivery to the central nervous system using an adeno-associated viral (AAV) gene therapy vector. In addition, we are isolating AAVexosomes with the potential to increase tropism toward the tumor microenvironment.

MICHAEL MAZZUCCO (BY) | Therapy RNA Interaction with HNRNPS to Induce Alternative Splicing in GBM

Chief Advisor: Dr. Martin Hicks

Glioblastoma multiforme (GBM), a grade IV tumor of the central nervous system, is the most common malignant primary brain tumor, having a median survival of only 14 months. GBM tumors are characterized by rapid cell proliferation and invasion, which is essential for GBM tumor growth and survival. To develop a new treatment, our lab has designed an RNA therapeutic vector against the pre-mRNA of the oncogenic transcripts, EGFR and VEGFR2. This therapy induces alternative splicing leading to shortened mRNA transcript isoforms. These alternate isoforms translate into soluble decoy proteins instead of the canonically spliced full-length transmembrane receptor. These soluble decoys competitively bind the EGF or VEGF growth factors, without activation of the intracellular tyrosine-kinase phosphorylation signaling pathway. Targeting of key splicing elements by RNA antisense therapeutics is complemented by the molecular cloning of a heterogenous ribonucleoprotein (hnRNP) binding domain into the RNA therapeutic vector, effectively silencing the site by intronic redefinition and splicing inhibition.
Currently, we are developing methods to test hnRNP proteins binding to multiple designed RNA therapies. Recombinant poly-histidine/FLAG tagged hnRNP vectors were cultured, isolated and purified. After induction and isolation with IPTG, multiple SDS-PAGE and Western Blots were performed to test refolding and elution from Ni-NTA column by imidazole or pH gradient. Although the final elution revealed the presence of multiple proteins, the hnRNPs of interest were shown to be expressed at too low a concentration for desired purposes without use of concentration columns. Instead, FLAG-tagged isolation of recombinant hnRNPs in eukaryotic HEK293T cells has been selected for use. Currently, the FLAG-tagged recombinant hnRNPs are being isolated from HEK293T cells. Future directions include cloning exon-intron junctions of targeted transcript by TOPO and Hi-Fi DNA assembly, to use in an Electrophoretic Mobility Shift Assay (EMSA) with our T7 transcribed therapy RNA to demonstrate both binding of hnRNPs to the RNA therapy and induction of alternative spicing mechanism.

POOJA SHAH (BY) | *Modeling Adolescent Co-Use of Alcohol and Amphetamine: A Pilot Study with the SHR Model for Attention Deficit Hyperactivity Disorder (ADHD)*

Chief Advisor: Dr. Dennis Rhoads

A number of important brain systems mature during adolescence, a time when many individuals have their first experience with alcohol and other drugs. Non-medical use of Adderall© (amphetamine), and other stimulants prescribed for treatment of attention deficit hyperactivity disorder (ADHD), peaks in adolescence and is of growing concern when combined with binge consumption of alcohol. Previous studies modeled repeated ethanol-amphetamine co-use in adolescent rats and provided evidence that amphetamine can attenuate alcohol withdrawal symptoms in a manner that may lessen an individual's awareness of impending alcohol dependence. The current project was designed to use the Spontaneously Hypertensive Rat (SHR) because of its emergence as an experimental model for the study of ADHD. I proposed the ADHD brain, for which amphetamine is potentially therapeutic, will develop a unique pattern of behavioral responses to repeated co-consumption of alcohol and amphetamine. Compared to previous studies, the SHR adolescents responded more strongly to amphetamine and amphetamine increased their anxiety-like responses to alcohol. Overall, they appeared surprisingly resistant to progressive signs of alcohol withdrawal used to gauge alcohol dependency. The results speak to the importance of better understanding alcohol-stimulant interactions in the ADHD population if effective educational, treatment, and prevention strategies are to be developed.

ALLISON ZALINSKY (BUBA) | *The Ethics of Tax Evasion*

Chief Advisor: Professor P. Jeffrey Christakos

Tax evasion has been an issue throughout the country since the early stages of the United States tax system. Those who commit tax evasion have respective reasons and beliefs for why they are able to commit this crime. In addition to the various reasons behind tax evasion, questioning factors of the United States tax law contribute to the ease of tax evasion. With the most recent tax code change came confusion for many individuals. If the tax code were easier for everyday citizens to understand, would there be fewer cases of tax evasion in the country? This thesis paper takes a look at peer-reviewed sources to look into the reasons for tax evasion and how the tax law could be changed in ways to make it easier for individuals to understand.

ANDREA MORA (CE) | *The Adsorption and Desorption of Chemical Species on Microplastics in the Aquatic Environment*

Chief Advisor: Dr. Tsanangurayi Tongesayi
Second Reader: Dr. Massimiliano Lamberto

The purpose of this study was to investigate the environmental conditions that promote adsorption and desorption of toxic heavy metal(loid)s on microplastic surfaces; as well as to investigate the role of microplastics on the biogeochemical cycling of the adsorbed elements on their surfaces. Microplastics extracted samples that were collected from the Atlantic Ocean and commercial cosmetic products were categorized based on color, shape and size and then identified using Fourier Transform Infrared Spectroscopy; most microplastics were identified as polyethylene and polystyrene. Through adsorption and desorption experiments, heavy metals like Zinc (Zn), Lead (Pb), and Chromium (Cr) were found to readily adsorb onto the microplastics at pH values that ranged from 5 to 9. These investigations clearly show that certain environmental conditions promote the mobility of toxic heavy metal(loid)s in the environment by adsorption and desorption. Adsorption will likely influence the biogeochemistry of the heavy metal(loid)s given that the microplastics also adsorb other chemicals and microorganisms that are known to promote the biogeochemical cycling of elements.

JOSEPH BREEN (BUBA) | Instructor Effectiveness in Financial Literacy Education

Chief Advisor: Professor P. Jeffrey Christakos
Second Reader: Dr. Jonathan Daigle

As the contemporary economic environment has developed, the power of the individual to determine one's financial future has increased dramatically. Accordingly, a great deal of attention has been given to creating educational courses that provide students with the skills to manage their personal finances. As a result, financial literacy education has grown into a vast industry with numerous institutions providing such classes, including Monmouth University's Financial Literacy Program (MUFinLit) for local high school students. However, despite the widespread desire for effective and efficient financial literacy instruction, the field has been plagued by mixed results regarding the success of existing programs and a general lack of consensus about the correct path toward improvement. Using pre-/post-assessment data from the Fall 2018 session of MUFinLit, this study assessed the effectiveness of the program in terms of student retention of the material presented. Although the course failed to generate significant improvements in the participants' financial knowledge, this study outlines its beneficial aspects, as well as its shortcomings. These results should serve as a blueprint for improving future editions of the course, while simultaneously adding to the growing collection of "best practices" and "pitfalls to avoid" when instructing students on financial literacy topics.

TAYLOR DONOVAN (BY) | *Characterizing Northern Diamondback Terrapin Nest Site Selection with Respect to Vegetation in Southern New Jersey*

Chief Advisor: Dr. Pedram Daneshgar
Second Reader: Professor John Tiedemann

Malaclemys terrapin terrapin (Northern Diamondback Terrapin), a unique species found within estuarine systems of the Atlantic coast, have been listed as a species of concern in New Jersey due to evidence of decline. While several factors, both natural and anthropogenic, are to blame for these declines, nest site degradation and loss may be the most detrimental to the success of future populations because of the strong nest site fidelity exhibited by terrapins. Disturbances, land alteration and the invasion of problematic species such as Phragmites australis seem to be driving nest site degradation, but definitive impacts to nest site selection have yet to be explored. In this study, we investigated the plant communities associated with newly laid terrapin nests along the New Jersey coast in an attempt to characterize nest site selection. It was hypothesized that site alterations and plant invasions have made sites less suitable for nesting and for the success of future populations. At each nesting site, the plant community was surveyed, and the habitat was described in regard to disturbance and invasions. To determine the impacts of the plant community on nest temperature, iButtons were installed in each nest within the 24 hours of the nest establishment. Results suggest that terrapins do not select sites based on the existing plant communities and that site fidelity rules selection. Additionally, plant community diversity was found to be significantly lower in plots where P. australis was present. In nests with higher percent cover, average daily nest temperatures were cooler, which supports the idea that vegetation does influence nests. Identifying the effects of different parameters on nest conditions facilitates our understanding of how disturbance, land alteration, and invasion may impact future populations. Characterizing nesting habitat is an essential step in ensuring that M. terrapin terrapin populations have adequate and appropriate space to sustain themselves for years to come.

NATHANIEL RODRIGUEZ (MA) | *Exploration of Heronian Shapes*

Chief Advisor: Dr. Susan Marshall
Second Reader: Dr. Laura Turner

A Heronian triangle is a triangle with integer side-lengths and integer areas. This concept of a Heronian triangle generalizes to higher dimensions. For example, a Heronian tetrahedron in three dimensions has integer side-lengths, integer areas, and integer volume and a Heronian 5-cell in four dimensions has integer side-lengths, integer areas, integer volumes, and integer hyper-volume. The concept also generalizes to polygons with more than three sides such as a Heronian quadrilateral or a Heronian pentagon. In this work, we consider both generalizations. There are currently no known examples of Heronian 5-cells. We attempt to construct a Heronian 5-cell in a particular family using lower dimensional triangles and tetrahedra. Our work leads us to conjecture that there are no Heronian 5-cells in this family. In two dimensions, we focus on polygons with four sides and construct infinite families of non-cyclic Heronian quadrilaterals. We also conjecture that all cyclic Heronian quadrilaterals with integer diameters can be placed in the *xy*-plane.

NICOLE ONDROF (EN.EDS) | *Incorporating Self-Directed Learning into the Secondary English Classroom*

Chief Advisor: Dr. Walter Greason
Second Reader: Kurt Wagner, MLIS, MA

This research project engages with previous scholarship on topics related to Self-Directed Learning (SDL) and couples it with an analysis of pedagogical strategies in order to demonstrate the benefits of SDL in the Secondary English classroom. Self-Directed Learning allows high school students to feel comfortable in the classroom and take control of their educational path through choices in content, facilitated discussion, and the incorporation of technology. This freedom to make guided choices regarding their education will help students to fulfill educational needs, including intrinsic motivation, intellectual curiosity, and sustained critical thinking. This project will provide useful context for teachers to help them understand both the benefits and potential difficulties that may arise with the integration of this type of learning into the current curriculum. This project suggests ideas for best practices and provides an example of a unit design that aligns with New Jersey state standards for teachers and stu-

HALEY GASPARINE (CO) | *The Relationship Between Host Families and Second Language Acquisition*

Chief Advisor: Professor Lisa Allocco
Second Reader: Dr. Jennifer Shamrock

The following study explores the relationships between study abroad students and host families during immersion programs at least three months in length and seeks to find how these relationships affect second language acquisition, anxiety, and linguistic confidence. Using a qualitative research approach, 11 United States college students are interviewed regarding their study abroad experience in France. Cultural differences, cultural similarities, and language turning points appear throughout the responses and prove to be the major components in language acquisition. Results indicate students had a major increase in second language acquisition and linguistic confidence after having a positive experience with host families. Additionally, results indicate that cultural differences are more likely to evoke anxiety and timidity among students, whereas cultural similarities act as points for communication and opportunities for connection. Furthermore, students report family dinners represented vital turning points in overall language improvement and linguistic confidence. Based on the results and existing literature, this study provides a unique take on the field of cultural immersion, highlighting student perspectives about host family experiences. These perspectives create a new lens allowing host families and immersion programs the opportunity to shape and accommodate language acquisition and cultural security in future students.

ERIK WENER (BUBA) | *Corporate Tax Inversion*

Chief Advisor: Professor P. Jeffrey Christakos

The purpose of this research was to determine the reasons why domestic corporations are leaving the United States for foreign countries. Also, before I decided to choose this topic, I was aware that the country was close to establishing a new set of tax laws called the Tax Cuts and Jobs Act. This created another research question for me as to whether or not the new laws would persuade United States companies to reinvest back into the country. The last problem I noticed during my research was that before the reform, major United States corporations were avoiding income taxes by exploiting various loopholes in the tax code. I conducted research to determine whether or not the country closed any of these. The research done in the paper mainly comes from scholarly articles, accounting firm websites, and databases. I also used a few company Annual Reports for a variety of reasons, including determining a company's net sales, tax expense, and research and development expense. After I conducted research, I concluded that the main reason why companies were leaving the United States was because of the high Federal corporate tax rate. When the country established the new tax laws, it lowered the rate in order to bring back these lost companies. However, very few corporations have reinvested back into the country. Along with this, the companies present in the United States are still taking advantage of the tax loopholes. Even though the reform was only passed in late-2017, I concluded that it has been ineffective in resolving its domestic and international problems.

JOSEPH FAY (BUBF) | *Life Insurance as a Financial Tool: A Background and Case Study*

Chief Advisor: Professor P. Jeffrey Christakos
Second Reader: Dr. Jonathan Daigle

Life Insurance is a risk management tool, but it has another very useful aspect not many know about. Life Insurance can also be utilized as an investment option. My goal was to answer the question, what is the best life insurance policy for cash accumulation? To answer the question, the history and background of life insurance was studied. Next, a case study of several different life insurance policies was conducted. Acknowledging opposing views on this issue is important, too. Many feel life insurance has no business mixing into investments. Critics feel you are better off separating life insurance and investments. This paper analyzed these concerns and has shown how life insurance as an investment

HAYLEY BRANSTROM (HS.EDS) | *The Great Turtle and the Jewel of Michigan*

Chief Advisor: Dr. Richard Veit
Second Reader: Dr. Frederick McKittrick

Mackinac Island's unique placement, history, and occupants have profoundly altered the identity of the region. Major events in the Straits are also able to give historians a new understanding of United States history, such as Native American relations, the Revolutionary War, and the War of 1812, by providing a crossroads at which the Native Americans, French, British, and Americans interacted. The ways in which Mackinac Island acts as a microcosm of American events make it particularly valuable from an analytical and historical standpoint. These qualities also make it a desirable and popular vacation destination for hundreds of thousands of visitors every year.

KELLY SCHULD (HS.EDS) | *Historical Roots of American Sign Language*

Chief Advisor: Dr. Maryanne Rhett

American Sign Language is a language used by the deaf in the United States. A language born and cultivated on American soil, ASL has historical roots dating back to medieval European monasteries. Methods and systems of educating the deaf evolved over the centuries. By the late eighteenth century, a public school for the deaf was established in Paris, France, which initiated a French Sign Language that was later, in the early nineteenth century, brought to the United States. A new school, established in Connecticut became the birthplace of American Sign Language (ASL). Pitted against the process of Oralism, teaching the deaf community to speak as more desirable than signing, ASL struggled to find acceptance in its early years. Today, the language stands, with all its history, as the language of the deaf in the United States, a proud deaf community.

STEPHANIE BIANCHINO (EN.EDE) | *Reading Motivation Among Elementary Students*

Chief Advisor: Dr. Kerry Rizzuto

There is currently great scrutiny in the field of education to determine what the best practices are in literacy instruction. Researchers in literacy education have begun to examine the role that motivation plays in learning to read. Reading motivation has risen to the top of what is considered to be a very important topic in the field of elementary education. Practitioners and academics alike recognize the need for students to be highly motivated and want to learn how to read in order for literacy instruction to be successful. Moreover, there is a correlation between low motivation for reading and low literacy levels. Additionally, researchers are studying factors that impact reading motivation. Proven practices that positively influence reading motivation include providing book choice; incorporating technology into literacy lessons; and integrating cooperative practices in literacy learning.

HARRY TERMYNA (PY) | *Political Ideology and Involvement: Analyzing their Impacts on People's Knowledge of and Trust for the Supreme Court*

Chief Advisor: Dr. Natalie Ciarocco
Second Reader: Professor Ryan Tetro

This study examined the relationships and influences both political ideology and political involvement had with and on Supreme Court (SC) trustworthiness and perceived/actual knowledge of the court. One hundred and thirty seven students participated in the study at a small private university in the northeast. All participants were asked to complete a social and economic conservatism scale, a political involvement scale, a Supreme Court trustworthiness questionnaire, a perceived knowledge inventory, an actual knowledge inventory, and finally a demographics form. As hypothesized, more conservative participants were more likely to bestow a greater amount of trust upon the court. Also, the more politically involved individuals saw themselves as, the more knowledge they saw themselves possessing of the court. Simple linear exploratory regressions also revealed that social economic conservatism was a significant predictor of Supreme Court trustworthiness and political involvement served as a significant predictor of perceived knowledge of the court. The results suggest that being involved in politics may give people more of a reason to feel overconfident in their knowledge of relevant topics. However, these perceptions are not mirrored over when it comes to relating involvement and actual knowledge. It can also be inferred that more politically conservative individuals may trust the court more because a majority of the court is currently occupied by right wing justices. These participants may have a higher affinity towards the majority opinions thus they feel a greater sense of confidence within the institution as a whole.

MONICA CORTES (BUBK) | *Subscription Box Marketing for the Common Athlete*

Chief Advisor: Dr. Michael Chattalas
Second Reader: Professor Justin McCarthy

This study examines marketing methods for a subscription box targeted at the common athlete. There is an untouched niche market for college athletes who are looking for athleisure wear that is comfortable and stylish at the same time. Athleisure wear is defined as "casual, comfortable clothing designed to be suitable both for exercise and everyday wear." While the athleisure trend is thriving, so is the subscription box business model. This study examined if student-athletes are willing to sign up for their own personalized subscription box service. Surveys were conducted to both men and women's lacrosse and soccer teams at Monmouth University to test the Research Propositions.

NAJAH PRYOR (CO) | *Kissing Frogs and Wishing on Stars: A Look into Princess Tiana's Image*

Chief Advisor: Dr. Jennifer Shamrock
Second Reader: Professor Matthew Lawrence

In 2009 the Walt Disney Company presented viewers with its first African American Princess. Over the years many have expressed their dissatisfaction with the way the film was presented, and Princess Tiana was portrayed. The film portrays Princess Tiana as a struggling, hardworking, but determined young woman. This is in a much different light than Disney's other princesses are portrayed. This project presents an audience reception study of the thoughts and reactions of a select number of Black mothers who viewed the film. The participants were asked about how the movie reflected back on them and their feelings toward the things they had seen. From their responses four themes were concluded: Disney as a socializing agent, the negativity of voodoo, the absence of black men, and realism versus negativity.

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