



MONMOUTH
UNIVERSITY

HONORS
SCHOOL



THE HONORS SCHOOL

RESEARCH CONFERENCE

FALL 2022

With great pleasure,
The Honors School presents its

FALL 2022 RESEARCH CONFERENCE

Students will be presenting their
research in the following fields:

ART

BIOLOGY

BUSINESS ADMINISTRATION

COMPUTER SCIENCE

EDUCATION

ENGLISH

MATHEMATICS

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FALL 2022

HONORS SCHOOL RESEARCH CONFERENCE SCHEDULE

Friday, December 9, 2022 - Library 101

SESSION A: 9:00-10:00AM

Opening Remarks: Dr. Nancy J. Mezey, Dean of the Honors School
Ava Taylor, Computer Science
Kiran Ramjisingh, Computer Science
Arielle Sinicin, Computer Science
Yosef Davidowitz, Computer Science
Nicholas Yalch, Business Administration (Finance)

SESSION B: 10:10-11:10AM

Opening Remarks: Dr. Nancy J. Mezey, Dean of the Honors School
Dustin Ho, Business Administration (Economics and Finance)
Dayana Khalil, Biology (Molecular Cell Physiology)
Marleen Butryn, Mathematics and Secondary Education
Loreanna Caputi, Mathematics and Elementary Education
Lilia Crew, Biology (Molecular Cellular Physiology)

SESSION C: 11:35AM-12:15PM

Opening Remarks: Dr. Nancy J. Mezey, Dean of the Honors School
Samantha Walton, English
Jacob Ashbrook Evenson, Biology (Molecular Cellular Physiology)
Jianna Walters, Interdisciplinary Studies for Elementary Education

THESIS ABSTRACTS

AVA TAYLOR |

FIRST READER: DR. RAMAN LAKSHMANAN
SECOND READER: DR. GEOFFREY FOUAD

FLOOD ALERT SYSTEMS: A CROWD SOURCED DATA COLLECTION AND DISTRIBUTION METHODOLOGY TO PROVIDE REALTIME ALERTS TO PUBLIC

This study assessed the flaws in the emergency alert systems (EAS) used to notify the public during a weather emergency, particularly flooding. By designing a mobile application that utilizes crowd sourced data, users can report their own flood data and analyze other reported realtime data, so communities have more accurate information about the dangers of a particular flood. Users can see specific areas and streets that are flooded, where flooding may be increasing or decreasing, if there are hazards in the roads, and the depth of the flooded areas all based on the reports of other app users. Working to enhance weather reporting systems can reduce mortality rates and damages caused by natural disasters. Since flooding is typically seen as a non-threatening weather event, alerts for flooding are often dismissed, ignored, and not taken seriously. Receiving data from one's fellow citizens and local community means the information is accurate to the user's specific location. This app is an effective way for information reach the public in the event of a flood.

KIRAN RAMJISINGH | FIRST READER: DR. LING ZHENG

THE ESPORTS STATISTICS BOT

eSports have gained much traction in recent years, bringing to gamers what sports do for athletes. As with any professional sport, viewers want player statistics, and they want them during games and conversation. The objective of this project is to provide eSports statistics in a convenient and quick manner to players wherever and whenever they need. Discord, the text and voice communication platform widely used by PC gamers, has a feature called bots. These are user-made programs functioning as users that can send messages and join voice calls. The eSports Statistics Bot takes queries from users and displays an information card with data about a requested player, team, or tournament for a specific game. This bot aims to make eSports information readily available on the platform most closely associated with eSports and PC communication.

ARIELLE SINICIN | FIRST READER: DR. DICKIE COX
SECOND READER: DR. LINDSAY MEHRKAM

DOG SHELTERS AND RESCUES

Dogs are the most popular companion animal in America, but the way that some people treat these animals goes against the age-old love for the species. Puppy mills are the front runners in the unethical dog breeding world, and the way that dogs are treated in these places is severely abusive. The mission of many dog shelters and rescues is to raid these places and rehabilitate dogs that have been abused. The objective of this paper is to analyze why shelters and rescues are helpful to the dog community. This thesis dives into the unethical practices of puppy mills and how the general public is unaware of how many dogs are bred in this way. Included as well is a discussion of euthanasia in overpopulated shelters and how this situation can be avoided. Topics such as foster families and the transportation of rescued animals are also explained. All in all, the goal of this thesis is to analyze and discuss the culture of dog rescue and how the public can be more educated about the process, so that they will want to adopt a dog rather than buying a dog who may have been bred unethically, in hopes of stopping the abusive practices of mass production dog breeding.

YOSEF DAVIDOWITZ | FIRST READER: DR. KEVIN DOOLEY

THE POTENTIAL EFFECT OF LOWERING THE VOTING AGE ON CLIMATE CHANGE

There is a growing movement in the United States to lower the voting age to 16. While this may sound like a radical, unprecedented change to the United States' election system, there are already several countries that have lowered their voting age to 16. Proponents of lowering the voting age argue that allowing younger people to vote will let their voices be heard by giving them a way to help fix the issues that matter to them, such as climate change. According to the Yale Environmental Performance Index, which ranks countries' environmental policies based on their commitment to climate change, environmental health, and ecosystem vitality, countries with a voting age of 16 and free and fair elections perform better environmentally than their neighboring countries that do not have a 16-year-old voting age. This paper discusses the potential effect that lowering the voting age can have on environmental issues by analyzing the effects of lower voting ages on environmental policy in countries with 16-year-old voting ages.

NICHOLAS YALCH | FIRST READER: DR. JONATHAN DAIGLE

THE UKRAINE-RUSSIAN CONFLICT AND ITS SUBSEQUENT IMPACT ON ESG SCORES AND EQUITY PRICES

This paper attempts to empirically measure the impact that the Ukraine-Russian conflict crises has had on equity prices as they relate to Environmental, Social, and Governance scores. The conflict has created large financial stressors for the world that have upended the traditional ways of thinking that are now customary in sustainable finance. Data on equity prices and a computed normalized ESG score is collected on the energy sector, aiming to limit the influence of other external factors by remaining as close to the invasion date February 24th, 2022, as measurable. The study examines whether or not there has been a reversal of ESG from the period before and after the invasion, and if it has been adequately reflected in equity returns. The research reflects the relevance of ESG as a quantified value of firm risk and exposure, as well as helping to set expectations for equity value crises in future geopolitical conflicts using ESG as the main variable.

DUSTIN HO | FIRST READER: DR. TJEERD BOONMAN

ECONOMIC VARIABLES THAT CONTRIBUTE TO HAPPINESS IN THE UNITED STATES

Monetary measurements are standard practice in determining a person's value and success, suggesting that income plays a large factor in people's lives. There is no doubt if a person is financially stable, there are opportunities to improve education, health, and overall quality of life. However, depending on the level and impact of these opportunities they can affect a person's life satisfaction in different ways. This research stems from the desire to move beyond economic measurements of productivity and income to redirect economists and policymakers to focus on social capital and well-being. Through that redirection, this study examines variables relating to life satisfaction, financial status, and standard of living to form a model that explains Americans' levels of happiness. The study investigates the relationship between household-level economic variables and their self-reported level of life satisfaction (happiness) to test three hypotheses: 1) Income will increase with happiness because of utility maximization; 2) Income will be a quadratic variable because of diminishing returns of utility, and 3) The multivariate regression model will show that there are other factors than income that affect happiness levels. The results support the three tested hypotheses after using multivariate regression analysis to investigate the relationships between happiness and economic variables.

DAYANA KHALIL | FIRST READER: PROFESSOR KIMBERLY CALLAS
SECOND READER: PROFESSOR EILEEN SACKMAN

THE IMPLEMENTATION OF THE HOLISTIC CRAFT PROCESS TO ANALYZE THE RELATIONSHIP BETWEEN CLAY, GLAZE, AND CHEMICAL AND PHYSICAL INTERACTIONS TO CREATE UNIQUE AND COHERENT PIECES OF ART.

The purpose of this study is to use the holistic craft process to integrate the scientific process along with an artistic process. The process of art is the focus and will therefore guide the research to lead to a final product. The holistic craft process consists of four main steps: forming an idea, designing it, making it, then reassessing. Research was gathered and compiled in a literature review to explore different topics necessary to understand the fundamentals of clay, glass, glaze, and their interactions. Recycled stoneware clay was used with glass and combined in diverse ways some before and some after firing. Much of this capstone will focus on the interactions of glass with different glazes and the reactions that result based on the glaze compositions. Techniques will be implemented to prevent the excess glass runoff from dripping onto the kiln shelves including the use of coasters. The pieces themselves were wheel thrown and glaze was poured over them followed by the addition of broken glass. After several tests, the information gathered was used to create unique and coherent pieces of art.

MARLEE BUTRYN | FIRST READER: DR. SERBAY ZAMBAK

FACTORS AND METHODS OF TEACHING THAT AFFECT EDUCATION AND THEIR IMPLEMENTATION WITHIN A UNIT PLAN FOR SECONDARY ALGEBRA I

The purpose of the research and capstone project was to examine multiple factors that affect an individual's ability to learn educational topics, such as mathematics, and new ways to teach subject matter to students. As a future math educator, it is crucial to understand the aspects that affect students' education and ways in which lessons and units will improve academic achievement. The selected project analyzed multiple components that play a key role in how people learn and the ways in which education for secondary students can be improved in creative ways. Sources were examined to explore the effectiveness of various high school mathematics curricula and their emphasis and utilization of creative teaching strategies. The literature review conducted indicates that physical and mental health, the learning environment, classroom management, and creative instructional practices are highly influential factors in teaching mathematics effectively and improving students' academic achievement. The review was used to create curricular materials for secondary mathematics, specifically Algebra I. The ultimate goal was to discover ways to better help students understand conceptual algebra topics and support all individuals in the most effective ways possible.

LOREANNA CAPUTI | FIRST READER: DR. AI KAMEI

THE NECESSITY FOR SOCIAL-EMOTIONAL LEARNING FOR GRADE SCHOOL STUDENTS EMERGING FROM A POST-PANDEMIC WORLD

Social-emotional learning (SEL) is a topic that is continuously gaining momentum within the field of education especially in a post-pandemic world where children need social and emotional support now more than ever, being that during the pandemic students had limited opportunities for social engagement considering the severe state of isolation. The increased emphasis on SEL directly correlates to fostering positive academic achievement outcomes, and providing students with a sense of belonging and enhanced motivation through active participation in the learning community. Thus, at a time where children's sense of identity formation is lost in direction, where their levels of stress and anxiety are reaching unwarranted heights, SEL can ameliorate the situation and improve children's development for their intrapersonal and interpersonal social-emotional competencies, which better influences positive results on the student's social, academic, and life-related success. To implement SEL effectively, the learning process must target three key competencies: cognitive regulation, emotional regulation, and social skills, considering research shows that academic learning and success happens most effectively when these dimensions are well implemented and supported. This thesis will present SEL sample activities to target each competency to provide educators with a framework of how to execute SEL endeavors within their classrooms.

LILIA CREW |

FIRST READER: DR. MEGAN PHIFER-RIXEY
SECOND READER: DR. RICHARD BASTIAN

THE EFFECT OF DIET ON THE BODY MASS OF HOUSE MICE FROM VARYING CLIMATES

Bergmann's rule states that larger species are found in colder environments while smaller species are found in warmer environments. However, little is known about the extent to which body size varies for animals of different environments based on dietary alterations. This research aims to understand how the body size of mice from Northern and Southern areas changes based on a regular protein diet and a high-fat diet. Strains of house mice from Canada, New York, Arizona, Florida, and Brazil were subjected to one of the two food trials and monitored over 12 weeks for body mass changes. Consistent with past findings, there were significant differences in the body mass of the strains after the 12 weeks. Results varied based on sex and strain. Male mice tended to be larger than their female counterparts. Mice from the New York strains also tended to have higher body masses in comparison to the other strains. To generalize, the strains from colder climates had a more drastic change in body mass than those of the more Southern strains.

SAMANTHA WALTON |

FIRST READER: DR. SUE STARKE

WALTON'S MYTHOLOGY

Mythology has been a constant companion of humanity throughout history; since the dawn of language, we have been sharing stories to explain our world and to teach morals. Ancient Greek mythology is of particular interest for its close relationship to the almighty; the gods interact with mortals directly and exhibit a physical and symbolic importance in their daily lives. By examining these myths, it is possible to determine the morals of those telling them, their view on nature, and the purposes they tell have for telling them. The lessons of mythology are universal and ubiquitous, which is why these stories have been told repeatedly for centuries. This project, taking the form of an updated classical dictionary, examines five Greek myths with varying levels of divine involvement to extract the moral lesson and to explain their lasting impact. Knowing and understanding these stories, along with the process by which one may examine other myths is a skill of prime importance to engage with the world and literature. Greek mythology is at the basis for many facets of modern society and morality. Learning these concepts at their source is necessary for interacting with the world one inhabits on a more nuanced level.

JACOB ASHBROOK EVENSON |

FIRST READER: DR. ELLEN DOSS-PEPE

A REVIEW OF THE USE OF PHAGE THERAPY TO TREAT ACNE VULGARIS AND ITS IMPLICATIONS ACROSS VARIOUS DISCIPLINES

Acne Vulgaris (acne) is a common chronic skin disease that can be triggered by an imbalance in the human skin microbiome with an overabundance of the bacteria, *Cutibellum acnes* (*C. acnes*). There are a plethora of treatments currently available to combat this condition, but current treatment for acne is primarily based on antibiotic medications. This has recently raised much concern due to the increasing amount of antibiotic resistant bacteria being driven by the use of these medications. The more effective treatments are also high in price, making them difficult to access and pose a significant threat to the mental health of those who face socioeconomic challenges. A promising solution to these problems is the introduction of phage therapy which uses bacteriophages, a virus that only infects bacteria, as the primary mechanism of action to kill the overabundance of *C. acnes* and return the skin microbiome to homeostatic conditions. It is not only highly effective but also low in price to produce and shows a promising future of being affordable and easily distributed. To support these claims, the available literature of peer reviewed articles were compiled to show the implications of phage therapy across the disciplines of biology, psychology, and business.

JIANNA WALTERS |

FIRST READER: DR. JASON FITZGERALD

WHAT IS TEACHER BURNOUT AND HAS IT BEEN AFFECTED BY COVID-19?

Covid-19 made 2020 a year full of stress. People had many questions about what the future would bring socially, mentally, and professionally. While individuals that have experienced burnout before may have enjoyed the change that Covid-19 brought, they also may have fallen deeper into their feelings of unfulfillment or exhaustion. While burnout was prevalent prior to the Covid-19 pandemic, the isolation of Covid-19 could have brought up further feelings of burnout symptoms such as depersonalization, reduced personal accomplishment, and emotional exhaustion. Now that most people have returned to what life was like prior to the Covid-19 pandemic, questions regarding the effects of this period of time are bound to rise. One important question pertaining to teachers specifically, is to what extent have the effects of the Covid-19 teacher burnout lasted beyond the immediate pandemic? This question is important to consider because the ramifications of Covid-19 could be felt by all for years to come. This study finds that teachers' perceptions of their burnout were amplified by the Covid-19 pandemic and that their burnout has been qualitatively changed by the pandemic. This suggests that Covid-19 has had a lasting effect on teacher burnout beyond the immediate pandemic and measures need to be taken to address this.

OUR MISSION

The Honors School promotes transformative learning in a collaborative community of student leaders and faculty mentors both inside and outside of the classroom. Students challenge one another to maintain the highest standards in their own discipline and across all fields of interest. Student scholars in the Honors School are expected to develop a great depth of understanding within their field of study, while appreciating intellectual inquiry in a broad context. Participants in the Honors School raise students' cultural, ethical, and social awareness as they develop into well-rounded scholars and citizens of a global community.