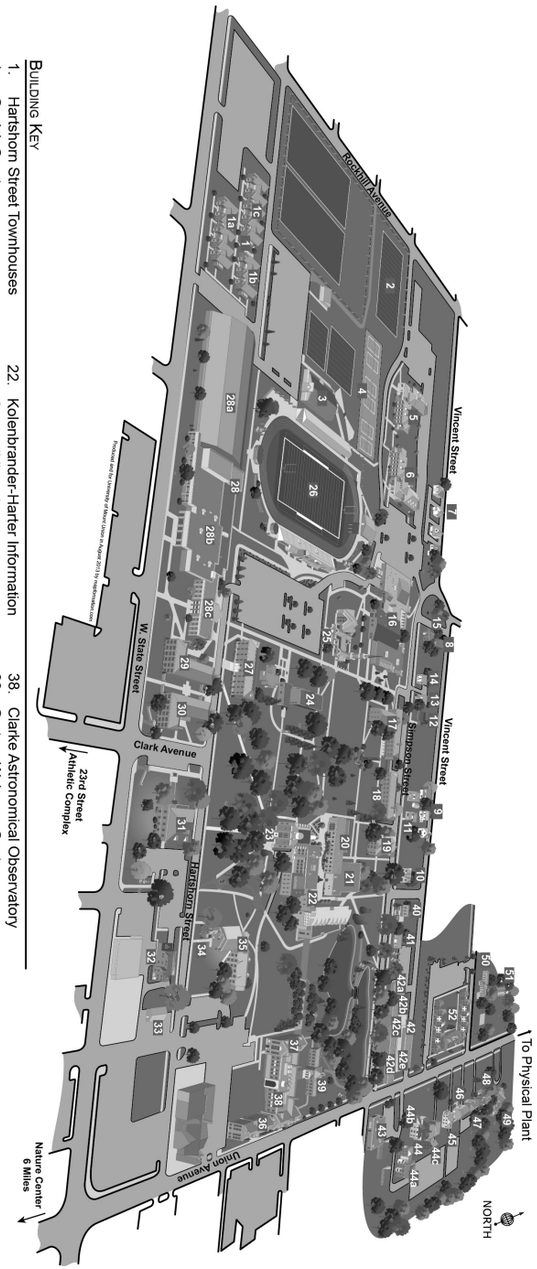
SCHOLAR Day

Student Celebration Honoring Our Latest Academic Research

Tuesday, April 30, 2019

Schedule At A Glance

9 – 9:45 a.m.	**Poster Session I** Giese Center for the Performing Arts
10 – 11 a.m.	**Presentation Session I** Engineering and Business Building and Tolerton and Hood Hall
11:30 a.m. – 12:30 p.m.	**Senior Recognition and Honors Convocation** Timken Gymnasium, McPherson Academic and Athletic Complex
12:30 – 1:30 p.m.	**Participant and Guest Lunch** Peterson Field House, McPherson Academic and Athletic Complex
1:30 – 2:30 p.m.	**Presentation Session II** Engineering and Business Building and Tolerton and Hood Hall
2:30 – 3:15 p.m.	**Poster Session II** Giese Center for the Performing Arts
3:30 – 4:30 p.m.	**Presentation Session III** Engineering and Business Building and Tolerton and Hood Hall



Building Key

1. Hartshorn Street Townhouses
1a. Orwick Court
1b. Adams Court
1c. Grove Court
2. Montgomery Field
3. Gulling Training Center
4. Whitehill Tennis Courts
5. Shields Residence Hall
6. Bica-Ross Residence Hall
7. 532 - 564 Vincent St.
8. Weber House
9. 330 - 254 Vincent St.
10. 205 Simpson St.
11. Black Cultural Center
12. Alpha Chi Omega Sorority House
13. 355 Simpson St.
14. Campus Security
15. 431 Simpson St.
16. Hoover-Price Campus Center
17. McMaster Residence Hall
18. Ketcham Residence Hall
19. Elliott Residence Hall
20. Engineering and Business Building
21. Tolerton and Hood Hall
22. Kolenbrander-Harter Information Center (Library)
23. Chapman Hall
24. King Residence Hall
25. Dewald Chapel
26. Mount Union Stadium
27. Miller Residence Hall
28. McPherson Academic and Athletic Complex (The MAAC)
28a. Peterson Field House
28b. Timken Physical Education Building
28c. McPherson Center for Health and Well-Being
29. McCready Residence Hall
30. Cunningham Residence Hall
31. Beeghly Hall
32. van den Eynden Hall
33. Structural and Geotechnical Engineering and Projects Lab (SAGEP Lab)
34. Keener House
35. Hoiles-Peterson Residence Hall
36. Gallaher Hall
37. Bracy Hall of Science
38. Clarke Astronomical Observatory
39. Gartner Welcome Center
40. Alpha Xi Delta Sorority House
41. Alpha Delta Pi Sorority House
42. Giese Center for the Performing Arts
42a. Brush Performance Hall
42b Gallaher Theatre
42c. Otto Art Gallery
42d. Cope Music Hall
42e Presser Recital Hall
43. William H. Eells Art Center
44. Brown Village
44a. Jae Manor
44b Keller Manor
44c. Clutter Manor
45. Perry F. King Guest House
46. Sigma Nu Fraternity House
47. Alpha Tau Omega Fraternity House
48. Delta Sigma Tau Sorority House
49. Fred J. Haupt President's House
50. Sigma Alpha Epsilon Fraternity House
51. Phi Kappa Tau Fraternity House
52. Union Avenue Townhouses

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Formal Presentation Abstracts

Raegan Baxter (Physician Assistant Studies)

Professor Vanessa Worley

1:30 p.m.,Tolerton and Hood Hall 101

"Flexitarian Diet: What Is It and Why Would Anyone Follow It?"

If being a flexible vegetarian meant that you could lose weight and improve your overall health, would you do it? Evidence suggests that high meat consumption is linked to negative health outcomes, but realistically a plant-based diet is not sustainable for many people. The flexitarian diet could potentially allow individuals to reduce their weight while also eating meat products they enjoy on limited days of the week. A systematic review of literature was conducted to determine if a flexitarian diet is an effective method for achieving and maintaining a healthy body weight. If so, clinicians can use these findings as a flexible lifestyle intervention for patients burdened by disease and obesity.

Mackenzie Berry (Physician Assistant Studies)

Professor Vanessa Worley

3:50 p.m., Tolerton and Hood Hall 101

"Exploring the Barriers to Timely Hospice Referrals for Terminally Ill Patients"

Hospice is a specialized type of patient care with the goals of maintaining or improving quality of life for those whose illness, disease, or condition is projected to be terminal, and of helping the patient and family prepare for one's passing. Hospice care is designed for fatally ill patients with six months, or less, to live. However, the majority of hospice patients are enrolled for less than one week, which ultimately prevents patients and families from realizing the maximal benefits of hospice. A systematic review was conducted, and eight refereed journal articles were included to identify why this happens and how change can occur. The barriers to timely hospice referral include common misconceptions of hospice, the Medicare system, a lack of communication between provider and patient, and hospice enrollment policies. We must address these barriers so that those who need and want this unique and powerful care can receive it.

Brittany Blankenship (Human Development and Family Science)
Alaina Fuller (Psychology)
Chloe Miller (Neuroscience)
Mitchell Morris (Neuroscience)

Dr. Tamara Daily

2:10 p.m., Tolerton and Hood Hall 201

"The Effect of Music Tempo and Wait Time Perception on Irritable Mood and Cognitive Performance"

In a society based on convenience and speed, waiting can be viewed as either a nuisance or a break from everyday activities. Many common situations include waiting, such as hospital waiting rooms, being put on hold on the phone, waiting in line, and being in traffic. Due to a lack of research examining the impact of varying tempo, we studied the effect of music tempo (fast, slow, or no music) on wait-time perception, irritability, and cognitive performance. Research on this question could be applied in many areas where people are expected to wait. Knowing what kind of background noise limits irritability and reduces the length of time people think they are waiting could be useful in a range of waiting situations. We predict that participants in the no music condition will report the most irritation, the longest perceived wait time, and the lowest performance on a cognitive task. We also expect that participants exposed to slow tempo music will report less irritation, shorter perceived wait time, and better scores on the cognitive test than those in the no music group, but that those in the fast music group will report the least irritation and shortest wait time overall, and the worst performance on the cognitive test.

Notes

Formal Presentation Abstracts

Brianna Boehlke (History)

Dr. John Recchiuti

1:50 p.m., Engineering and Business Building 203

"We Are All a Bit Mad Here: An Analysis of Hysteria in the 19th Century"

Distress, stress, and sensitivity to emotion were only a few of the diagnosable symptoms of hysteria in the late nineteenth century United States. Throughout the century, women in many states could, without compelling evidence, be committed to insane asylums under the diagnosis of hysteria. Since there was no clearly agreed upon definition of hysteria, a dangerous situation arose for some women, as they were committed to insane asylums by judges, psychologists, medical doctors, or the patients' husbands for little to no cause. This presentation will explore how the diagnosis of hysteria was deployed in the context of nineteenth century gender roles and True Womanhood. The diagnosis of hysteria was fraught, which left room for the diagnosis to be utilized as a mechanism of oppression. This presentation will argue that the diagnosis of hysteria in the nineteenth century was often based in the sexist and oppressive perspectives and theories of medical doctors and psychologists. Both overt and subtle manifestations of sexism were apparent within the United States in the nineteenth century. For example, the cult of true womanhood, as Barbara Welter argued, stressed four pillars, purity, piety, submissiveness, and domesticity. When a woman violated the norms set forth by the cult of true womanhood, society often ostracized her. As evidenced by the definition of sexism, the arbitrary social roles enforced by the cult of true womanhood were a result of sexism. Nineteenth century beliefs in different, separate spheres for men and women influenced psychologists and medical doctors of the era.

Noelle Boyd (History/Japanese)

Dr. John Recchiuti

3:30 p.m., Tolerton and Hood Hall 100

"History Echoes: Historical Influences on the Alt-Right's Political and Social Ideology"

The rise of the alt-right movement within the United States is a phenomenon that has been considered an increasingly problematic trend in American politics. The alt-right is often considered a scourge on American society, and their platform is plagued with ideologies generally considered abhorrent among the American people. The purpose of my research is to analyze the historical events that have impacted the alt-right's platform and the personal beliefs of its members. Using a collection of direct quotes and sources from members and self-proclaimed leaders of the alt-right I have collected from interviews and Breitbart, as well as primary and secondary sources from historical events and traditional belief systems, I will explore the historical influences on the alt-right's ideology. I will particularly focus on anti-Semitism in relation to the rise of fascism in Europe and the United States, racism with a primary focus on anti-blackness and its relations to slavery, and anti-feminism in relation to America's traditional patriarchal societal roles.

Formal Presentation Abstracts

Nicholas Brish (Civil Engineering)
Philip Mary (Civil Engineering)
Trevor Cox (Civil Engineering)
William Goodall (Civil Engineering)
Dr. Yan Liu
10 a.m., Engineering and Business Building 203
"Baker's Residence Design Project"
Our project was for ECE 480/490: Civil Engineering Capstone. The project was the Baker's Family Residential house. Our group aided in the confirmation that current designs would work and provide alternative designs for the foundation and beam that support the house. Also, a topographic survey, cross section of the excavation, cost estimation of the project, construction log, and photo journal of the project were created throughout the past year. Overall, the project covered two main disciplines of Civil Engineering in the alternative geotechnical design and the alternative beam design for the residential house. These main disciplines were supported by two other minor disciplines of Civil Engineering in survey and basic construction management principles, which were the photo journal and construction logs.

Wylie Brown (Mechanical Engineering)
Gage Lau (Mechanical Engineering)
Kyle Herman (Mechanical Engineering)
Michael Falcone (Mechanical Engineering)
Dr. Joshua Gargac
3:50 p.m., Engineering and Business Building 206
"Continuously Variable Transmission Tuning Stand"
A continuously variable transmission (CVT) differs from a traditional transmission since power is transmitted using two pulleys instead of a system of gears. As the pulleys rotate, springs and counterweights cause the pulleys to change diameters, allowing the gear ratio to change automatically in response to loading. To optimize a CVT's performance, the spring stiffness and counterweight masses can be changed to increase the output torque or speed. However, this process is often time consuming, relying mostly on trial and error. Therefore, the purpose of this project was to design a CVT tuning stand that enables a more streamlined tuning process. The CVT test stand was designed following the engineering design process. Briefly, a literature review was performed, and design requirements were developed. Specifically, the shafts connecting the engine and CVT must support a torque of 106 ftlb, and sensors must continuously measure engine and CVT revolutions per minute (rpm). Models were created using SolidWorks software to analyze the weight and strength of three design concepts, and a decision matrix was used to select a final concept. The CVT test stand consists of 10 hp engine and CVT mounted to an aluminum profile frame. A brake system is attached to the CVT's output shaft to enable variable loading. RacePak software uses sensors to measure and record the rpm of the engine and CVT output simultaneously. This tuning stand will be used by the Raider Racing club to optimize CVT tuning on their Baja vehicle, resulting in higher finishes in upcoming off-road races.

Poster Presentations

Poster Session II | 2:30-3:15 p.m. | Giese Center for the Performing Arts

Aubrey Buchweitz (Physician Assistant Studies)
Professor Vanessa Worley
The Correlation Between Concussions and Suicidality

William Clay (Chemistry)
Dr. Robert Woodward
Understanding Structure-Property Relationships of 3D Printable Polymers

Spencer Cline (Neuroscience)
Cassidy Hiles (Psychology)
Spencer Clarke (Psychology)
Dr. Tamara Daily
Effect of Mindfulness Intervention on Public Speaking Anxiety in College Students

Tyler Cooper (Mechanical Engineering)
Dr. Joshua Gargac
Mechanical System Analysis using Computer Aided Engineering (CAE)

Hanna Davis (Biology)
Marcus Morrison (Biology)
Dr. Christopher Marks
BIO 405 Epigenetics

Meghan Dier (Physician Assistant Studies)
Professor Vanessa Worley
Screening for Sex Trafficking in the Emergency Department

Jennifer Gotschall (Biochemistry)
Dr. Keith Miller
Bacterial Stimulation of RAW Mouse Macrophages Heightens TNF-Production to Elicit an Immune Response

Emily Henson (Athletic Training)
Dr. Sonia Wehrlin
Femoral Neck Fractures

Amrita Jagpal (Physician Assistant Studies)
Professor Vanessa Worley
Intermittent Energy Restriction: Is Fasting a More Effective Way for Adults to Lose Weight Than Conventional Dieting?

Daijahnae Jones (Exercise Science)
Dr. Ronald Mendel
Influence of Follicular and Luteal Phases of the Menstrual Cycle on Muscular Endurance Performance

Nicole Lanese (Psychology)
Claudia Boryka (Psychology/ Criminal Justice)
Megan Ronceray (Psychology/ Criminal Justice)
Dr. Sarah Torok-Gerard
The Effect of Superstitious Behaviors, Importance of game and Internal Locus of Control on Athlete's Perception of Game Play

Lisa Lautzenheiser (Art)
Dr. Margo Miller
Book Jackets Re-Designed

Abigail Matsushima (Exercise Science)
Connor Troyer (Exercise Science)
Dr. Ronald Mendel
The Cognitive Effects of Caffeine During Different Phases of the Female Menstrual Cycle

Christal Schumacher (Exercise Science)
Brett Bell (Exercise Science)
Matt Harris (Exercise Science)
Stephen Durst (Exercise Science)
Emma Thombs (Exercise Science)
Dr. Lonnie Lowery
Quantifying Similarities and Differences Between Wearable Fitness Trackers in University Students.

Brynn Skilliter (Physician Assistant Studies)
Professor Vanessa Worley
Anxiety is Ruff: A Systematic Review on the Use of Therapy Dogs in Pediatric Outpatient Settings

Brianna Slemons (Athletic Training)
Dr. Sonia Wehrlin
Mental Aspects of Injuries in Athletics

Hannah Stryker (Physician Assistant Studies)
Professor Vanessa Worley
Needle Exchange Programs: Dangerous Enabling or Important Prevention?

Poster Presentations

Poster Session I | 9-9:45 a.m. | Giese Center for the Performing Arts

Matthew Bringman (Athletic Training)
Dr. Sonia Wehrlin
Femoroacetabular Impingement Syndrome

Lauren Entwistle (Physician Assistant Studies)
Professor Vanessa Worley
Using Intravenous Ketamine to Rapidly Reverse Acute Suicidal Ideation in the Emergency Department

Andrea Fry (Physician Assistant Studies)
Professor Vanessa Worley
When Time is Brain: The Innovation and Implementation of Telemedicine for Quicker Acute Stroke Care

Cassandra Gillespie (Physician Assistant Studies)
Professor Vanessa Worley
Is it 'Just for Sport?' The Negative Physical and Psychological Effects of Early Sport Specialization in the Pediatric Population

Mackenzie Glaros (Nursing)
Professor Karen Towne
What Is the Effect of Lavender Aromatherapy on Pain Perception During Labor?

Alicia Gnecco (Physical Therapy)
Lindsay Abrams (Physical Therapy)
Kayla Maretich (Physical Therapy)
Symone Reed (Physical Therapy)
Rocco Sandrella (Physical Therapy)
Dr. Megan Salvatore
The Relationship Between Ankle Range of Motion and Gait Parameters in Fallers and Non-Fallers in the Aging Adult Population

Matthew Harris (Exercise Science)
Jason Vansickle (Exercise Science)
Robin Putman (Exercise Science)
Dr. Lonnie Lowery
The Effects of Gender on Psychometric and Epinephrine Responses to Pre-Exercise Coffee

Lauren Herubin (Chemistry)
Rachel Tinkey (Biochemistry)
William Clay (Chemistry)
Dr. Jeffrey Buth
Impact of Ground Size and Brew Method on the Extraction of Chlorogenic Acid, Caffeine, and Caffeic Acid for a Cup of Coffee

Hunter Mattern (Neuroscience)
Dr. Kristine Turko
(Mis) Diagnosis: Gender-Specific Behaviors Associated with Diagnosing Autism Spectrum Disorder

Alexandra Nelson (Environmental Science)
Dr. Christopher Marks
The Effect of Deep Hook Implantation in the Cichlid Oreochromis tanganicae

Masashi Nishiguchi (Mechanical Engineering/ Mathematics)
Dr. Shehla Arif
Inward Migration of Tea Leaves in Rotating Fluid Flow

Lauren Oktavec (Exercise Science)
Dr. Ronald Mendel
The Effects of Hydration Status on Athletic Performance

Regina Saxon (Exercise Science)
Dr. Ronald Mendel
The Effects of Coffee on Reaction Time in Division III Collegiate Swimmers

Kelly Simunich (Exercise Science)
Alyssa Braun (Exercise Science)
Dr. Ronald Mendel
Body Composition Methods: A Validation Study

Tia Swallow (Biology)
Dr. Lin Wu
The Effect of Diet on the Gut Microbiota of the Madagascar Cockroach

Shelby Vacha (Psychology)
Brinnley Belcher (Human Development and Family Science)
Alayna Kennedy (Psychology)
Megan Holland (Psychology)
Courtney Johnson (Psychology)
Dr. Sarah Torok-Gerard
Sleep Deprivation and Racial Prejudice

Madeline Van Orman (Biology)
Dr. Lin Wu
Assessing the Effects of Largemouth Bass Introduction on Bluegill Growth at the University of Mount Union's Nature Center's West Pond

Formal Presentation Abstracts

Bethany Cox (Neuroscience)
Samantha Pechkurow (Psychology/Criminal Justice)
Taylor Castle (Psychology)
Abigail Van Auken (Psychology)
Madeline Poldruhi (Neuroscience)
Dr. Michael Knepp
3:50 p.m., Tolerton and Hood Hall 201

"The Effects of Time Pressure on Anxiety and Heart Rate"

Standardized tests are intended to measure achievement, however with the reliance of educators on these tests, hindering effects caused by time limitations are overlooked. Time limitations in standardized tests tend to inhibit students' abilities to perform well on tests, which may lead to increased heart rate and anxiety (Schwartz, Evan, & Agur, 2015). Approximately 35 students will participate in the study. There will be a timed group, having 10 minutes to complete the test (Group 1), and an untimed group with no time limitations (Group 2). Anxiety levels will be recorded before and after the mock standardized test, along with heart rate throughout the course of the test. It is hypothesized that there will be a greater increase in anxiety from before the test to after the test for the timed group when compared to the untimed group. Additionally, it is hypothesized that when comparing Group 1 and Group 2, that Group 1 would have a greater increase in heart rate when comparing the heart rate from the beginning to the middle of the test and the beginning to the end of the test. The data collection will be completed by spring break. If the results support the hypotheses, it will indicate that students are hindered by timed testing due to an increase in heart rate and anxiety. If the results support the hypotheses, it will inform students and educators of the harm from time limitations and it is hoped that they will create solutions to eliminate these harmful effects.

Tirzah Curry (Psychology/Communication Studies)
Lou Marich (Psychology)
Allison Erisey (Psychology/Sociology)
Logan Coe (Psychology)
Joshua Petkash (Psychology)
Dr. Sarah Torok-Gerard

10:40 a.m., Tolerton and Hood Hall 101

"It's Not That Funny: Racial Prejudice & Disparaging Racial Humor"

The relationship between one's level of racial prejudice and reactions to racially disparaging jokes will be assessed. Ratings of the jokes' funniness, appropriateness, and how comfortable the listener felt hearing the joke will be explored. A goal sample of approximately 75-100 participants will view eight videos with four actors (two Caucasian and two African American) each telling two jokes (one that is disparaging to Caucasians, one that is disparaging to African Americans). Each participant will rate the outcome variables of perceived joke funniness, appropriateness, and comfort level in response to each joke on a scale from 1 to 5. If data allows, relationships between racial prejudice and demographics may be explored. These demographics include age, race, and political tendencies in relation to social issues. It is predicted that the presence of racial prejudice will increase the likelihood that a person will find racially disparaging jokes targeting their racial outgroup more humorous, more appropriate, and be more comfortable with them compared to a person who has low levels of racial prejudice. Multiple linear regressions will be used to test the nature of the relationships between racial prejudice and participants' ratings of perceived joke funniness, perceived joke appropriateness, and perceived level of comfort when hearing the racially disparaging jokes. Implications of the results and avenues for future research will be discussed. *Note: currently, we are still in the data collection phase so we've only projected findings at this point.

Michael Delsanter (Mechanical Engineering)
Daniel Robinson (Mechanical Engineering)
Michael Shull (Mechanical Engineering)
Dr. Joshua Gargac

1:30 p.m., Tolerton and Hood Hall 100

"Robotic Football Team's Kicker"

The University of Mount Union has a history of football excellence. The Raider Robotics team hopes to achieve the same level of success in the Intercollegiate Robotic Football Competition. This annual competition consists of an 8-on-8 football game and an NFL-draft style skills combine. The Robotics team has not yet built a kicking robot and has lost points in the combine by skipping the kicking events. Therefore, the goal of this project is to design and build a robotic kicker. The robot was required to kick field goals up to 60 feet, fit within a 24"x16"x24" box, and weigh less than 45 lbs. Following the engineering design process, unique concepts were generated, their feasibility compared, and final design was selected. Technical analysis was performed to assure that the robot met each of the design requirements. Finally, the robot was constructed, and its performance tested. The robot is controlled by an Arduino chip and a PlayStation controller. A crossbow is incorporated into a ½" thick plastic base to actuate kicking. Before kicking, the crossbow is cocked, and a football is stationed on a tee. Releasing the crossbow propels a foot into the football, sending it as far as 100 ft. Adjusting the geometry of the tee changes the launch angle of the ball, allowing for onside, squib and deep kickoffs. Through ingenuity and the ability to execute the design process, this robot will help the robotics team win the skills combine at the University of Notre Dame on April 13.

Formal Presentation Abstracts

Nicole Mace (Psychology)
Victoria Nash (Psychology)
Lena Zumack (Human Development and Family Science)
Brittany Zupancic (Psychology)
Dr. Tamara Daily

10 a.m., Tolerton and Hood Hall 201

"Eating Issues and Familial Stress: Comparison of Children with and without Autism"

The need for Golden Key's food school will be explored in the proposed research. Parents of children enrolled at Golden Key will be recruited to take a survey via SurveyMonkey to assess food selectivity, problem mealtime behaviors, and familial stress. Parents will take the survey consisting of demographic questions, scales measuring food selectivity, familial stress, and mealtime problematic behaviors. It is predicted that parents of children who have autism will report greater food selectivity and food refusal, more problematic mealtime behaviors, and higher levels of familial stress than parents of children who do not have autism. It is hoped that the findings will be useful to the Golden Key as they seek continued or expanded funding for the Food School program.

Graycen Wood (Communication Studies)

Dr. Elizabeth Bandy

1:30 p.m., Engineering and Business Building 206

"Attitudes on Race and Criminal Justice"

The American criminal justice system relies on the presumption of innocence of the accused. Consequently, every defendant, regardless of gender, ethnicity, shape, or size, should enter the courtroom with a blank slate. While this may be the ideal standard, human beings carry with them biases which are perpetuated via the use of language. Past research has demonstrated a clear disconnect in the public's level of satisfaction with the criminal justice system. What has not been previously examined is how race plays a role in the public's satisfaction with sentences handed down to offenders and in the creation of bias that could interrupt the criminal justice process. In my research, respondents were asked to complete a 17-question survey administered online assessing participants' opinions on criminal sentencing, semantic differential ratings, and an implicit association test to identify implicit racial biases. It is hypothesized that results will reveal: people with any implicit preference for white people will rate the images closer to the negative words and will rate the sentences given to the offenders as adequate or lenient; people who identify sentences given to offenders as lenient will be less satisfied with the criminal justice system; and people with an implicit preference for black people will rate the sentences given to the offenders as harsh. Future implications of my research include implementing diversity training in the jury selection process. Limitations include the respondents' prior conception of the criminal justice system, respondents' tendency to answer dishonestly, and technological malfunctions with the implicit association test.

Travis Wylie (Japanese)

Dr. Hamako Furuhata-Turner

10:20 a.m., Tolerton and Hood Hall 101

"The Japanese Population Crisis and its Effect on the Shinto Religion."

The intricately interwoven issues of a declining birthrate and an aging population have a profound impact on the cultural and social structures of all post-industrial societies. The proof of this statement is clearly on display in the increasingly empty rural communities of Japan and the rapidly vanishing shrines of Japan's native religion, Shintoism. Through this presentation, the religious community of Kashima-jinja, a rural Shinto shrine in Japan's Akita Prefecture, offers their personal story and perspective to assist the outside world in better understanding this troubling trend. This presentation will draw upon community-based research and one-on-one interviews conducted during the study abroad experience, as well as population reports and other documentary sources. It is important that researchers and the intellectual community at large acknowledge the stories of people such as those surrounding Kashima-jinja, for those capable of telling their story may soon vanish from memory.

Formal Presentation Abstracts

Ian Dilyard (Physics)

Dr. Steven Cederbloom

4:10 p.m., Tolerton and Hood Hall 201

"Bowling for Physics: Examining Friction on a Bowling Lane"

The sport of bowling has plenty of interesting physics involved, most of which comes from the bowling ball itself. Bowling balls are designed to hook, or to curve towards the pins when spun. This study focused on one of the two main factors affecting how a bowling ball hooks: the friction between the ball and the lane. Lanes are covered with a thin layer of oil, and the distribution of that oil strongly affects when the hook can begin. A model for the friction interaction was proposed, and to verify its accuracy, a 12-foot section of a lane and some oil were acquired. 2 balls with different surface types were used to see if any significant differences were observed. The lane was covered with varying amounts of oil, then each ball was slowly thrown down the lane. The motion of the balls was recorded and analyzed. The results of this research may help professional bowlers understand oil patterns better and allow them to make more educated decisions on what equipment to use. Further research could be done to examine the effects of different ball surfaces and the cores of the balls.

Ryan Ditrick (Writing)

Dr. Gwen Gray Schwartz

10:20 a.m., Tolerton and Hood Hall 100

"The Place of Profanity in Fiction"

When is it ok to use the F word? When we speak, we use profane language to convey our extreme emotions. For this reason, it's only natural for fiction writers to use profanity to accurately construct a more realistic narrative. However, it's very easy to use it in a way that makes the work seem sloppy or even childish, so it's important for emerging writers to understand how to use profanity effectively if they want their work to succeed. In this presentation I will discuss the rhetorical decisions writers make about swearing. I will first explain what seasoned, professional writers have to say about the use of profanity in their writing, and then apply that research to a limited, original corpus analysis of amateur fiction from writingforums.com. Using this analysis, I will show what happens when profanity is used too much, and when it is used too little in both dialogue and narration.

Sarah Donkin (Writing)

Dr. Gwen Gray Schwartz

10:40 a.m., Tolerton and Hood Hall 100

"Exploring Nature Through Songs"

Nature has been a popular topic in poetry for a long time. The Romantic poets are some of the forefathers of nature poetry, and since their days, nature has remained a common theme in poetry. Nature poetry has also found a subcategory in ecopoetry, which discusses the relationships between people and nature and sometimes addresses the issues with the damage that people are doing to nature. In addition, while poetry is still alive and well today, there are some other forms of writing that may be more accessible to a wider, or at least a different, audience. Music is one of these forms, and songwriting is a bridge between poetry and music. Because nature is an important part of our world, my project explores nature and our relationship to it through songwriting in order to reach a different audience.

Kathleen Allen (Mechanical Engineering)
Zachary Dozier (Mechanical Engineering)
Gunnar Maher (Mechanical Engineering)
Thomas Petrella (Mechanical Engineering)
Dr. Joshua Gargac

10:40 a.m., Engineering and Business Building 203

"Gait Test Assistive Device"

A 400 m gait test is an inexpensive gait function test used by physical therapists to assess dynamic balance, aerobic ability, and muscular endurance. Currently, practitioners use gait belts to slow, but not always prevent the falling of unstable patients. There are many commercially available products to aid in stability including canes and walkers, however, these products alter the results of the test by eliminating natural arm motion and limiting stride length. The goal of this project was to develop an assistive device to enable physically unstable patients to complete walking gait tests without affecting the patient's gait velocity or stride length. GAIT-X was created following the engineering design process. First, the principles of stability and existing commercial devices were researched. Three design concepts were then generated and evaluated using decision matrices. Technical analysis of the final design ensured the device will support the patients and that the components would meet performance requirements. Finally, the GAIT-X will be built and tested with a gait test. The GAIT-X consists of an aluminum tubing frame built upon triangular bases. Two vertical tubes can slide into the main base, allowing the device to adapt to patients ranging in height from 51 to 72 inches. Patients are supported in the frame using a combination of three commercially available products: a steel tire swing swivel, adjustable bungee cords, and a fall-arrest safety harness. Overall, the GAIT-X enables participation in gait tests by reducing the risk of falling without impeding arm motion and stride length.

Dillon Frees (Exercise Science)
Barry Myers (Exercise Science)
Dr. Ronald Mendel

10:20 a.m., Engineering and Business Building 203

"Effects of Caffeinated Chewing Gum on Collegiate Soccer Players: Improving a Battery of Common Soccer Tests"

The literature has shown that caffeine has been used to improve exercise performance (Cosa et al. 2012, Evan et al. 2018, Jacobson et al. 1992). In recent years, non-traditional forms of caffeine such as caffeinated chewing gum have been of great interest due to the quicker absorption rate compared to traditional forms of caffeine; this is attributed to the absorption in the buccal mucosa of the mouth. This could benefit athletes where there is limited time for nutrition interventions in competitions or games (i.e. halftime). The purpose of this study was to determine the ergogenic and physiological effects that caffeinated chewing gum will have on a battery of common soccer tests in collegiate soccer athletes. Additionally, the purpose was to measure the absorbance rate of caffeinated chewing gum. Sixteen men and women division III collegiate soccer players were recruited and the study was divided into two phases. Phase I consisted of a randomized sub-set of eight subjects who chewed the caffeinated chewing gum for five minutes and blood draws were taken at the baseline, ten- and twenty-minute mark and analyzed for serum caffeine. In phase II, subjects were randomly given either placebo or caffeinated gum and underwent a series of common soccer tests which included: standing broad jump, counter movement jump, arrowhead agility test, 30m sprint and a timed one-mile run. Following a seven-day washout period the same protocol was repeated but with the other intervention gum. Data collection was not complete at the time of abstract submission.

Formal Presentation Abstracts

Jacqueline Vega (Spanish/Early Childhood Education)
Dr. Gregg Courtad

10 a.m., Tolerton and Hood Hall 100

"The Crisis in Nicaragua: Mount Union's Connection to Nicaraguan Students "

On April 18th, 2018, Nicaragua was brought into the global spotlight as a political and governmental crisis began to take over the country. The crisis began after changes were made to the nation's social security system by president Daniel Ortega. These changes have impacted not only the elderly Nicaraguan citizens, but also the university students who decided to use the government's actions as a catalyst to create change in their country. Through the University of Mount Union, professor Steve Kramer has visited Nicaragua with his Social Responsibility Class for the past three years. In fact, the last course had just arrived home from the trip at the end of March 2018, only weeks before the crisis began. Through the course, Mount Union students were given the opportunity to learn about social, environmental, and ethical issues across the globe. These issues were witnessed during the trip to Nicaragua through interactions with citizens in the village of El Obraje. Through research into the political history of Nicaragua as well as interviews with citizens met through the Social Responsibility course, it has been found that the Nicaraguans need support in any way possible and have looked to Mount Union faculty and students for assistance. The people that the students of the Social Responsibility course met in Nicaragua are some of the residents that have been impacted by the uprising in the country, giving members of the Mount Union community a personal connection to the uprising and frightening events that have occurred in Nicaragua.

Christopher Ward (Physician Assistant Studies)
Professor Vanessa Worley

10:20 a.m., Engineering and Business Building 206

"Quitting Tobacco with Electronic Cigarettes: Is Vaping an Effective Way to Stop Smoking?"

In the last decade, the world of tobacco smoking has been shaken up by the introduction of the electronic cigarette. Use of an e-cigarette is often referred to as vaping. Now widely popular, especially with young adults, many smokers attempt to quit traditional cigarettes by switching to e-cigarettes. Despite how common e-cigarette use is, there is very little public knowledge about how effective vaping is at helping smokers kick their habit. Through a systematic review of literature, I will examine the effectiveness of e-cigarettes in the reduction or quitting of traditional cigarette smoking. Any smoker, from young college students to long-term smokers, may be looking for an effective way to quit smoking before many of the long-term ill-effects take root. Can an e-cigarette help smokers overcome their traditional tobacco addiction? Emerging research shows that vaping to stop traditional cigarette use may not be as effective as originally hoped.

Spencer Whyte (Political Science/History)
Dr. Michael Grossman

3:30 p.m., Engineering and Business Building 203

"A Tenuous Island: The Destabilization of Britain's Role in the International System of the 21st Century"

Role theory is a concept in the study of international relations that posits that states will act in accordance with roles it perceives itself to play. Within the umbrella of role theory, the idea of role contestation is the process by which the different parties within a state with a part in policy-making decide upon and agree to roles. The United Kingdom has been experiencing an extended period of political instability. This project analyzes the specific circumstances within the international system, as well as the UK itself, that has led to controversies such as the Scottish Independence referendum and the Brexit vote. An extensive exploration of these events, as well as the sentiments of leaders within the UK will bring to light the underlying political problems within the island nation.

Samuel Todd (Exercise Science)
Dr. Ronald Mendel

4:10 p.m., Tolerton and Hood Hall 101

"Efficacy of Variations of a 3-Repetition Back Squat Warm-Up for Potentiating Sprint and Jump Performance"

Post-activation potentiation (PAP) is an acute physiological phenomenon resulting from previous muscular contractions, and has received attributions for enhanced physical performance. The body of literature investigating exercises to induce PAP is extensive, however, firm conclusions on "optimal" protocols have been elusive thanks to a number of factors contributing to PAP, as well as the need for comparative studies. A previously successful single set of three (1x3) back squat protocol was analyzed to determine 1) if the protocol can enhance sprint and jump performance beyond performing a dynamic warm-up, 2) if certain intensities of the back squats yield better performance improvements than others, 3) the influence of back squat strength upon the optimal protocol, and 4) the influence of rest interval upon the peak performance improvements. University football and soccer athletes were recruited to participate in a repeated-measures crossover study to assess the PAP effects of four different intensities of the 1x3 back squat warm-up: 60% of one-repetition maximum back squat (1-RM), 70% 1-RM, 85% 1-RM, and 90% 1-RM. Day one of testing established the participants' 1-RM back squat. Days two through five were utilized to assess the performance altering effects of adding the 1x3 back squat warm-up following a dynamic stretch. Vertical jump height and 20-yard sprint times were assessed after completing the dynamic stretch (Baseline), and 30 seconds, 2 minutes, 4 minutes, 8 minutes, and 12 minutes following the 1x3 back squat. Data collection and analyses are still in progress at the time of this submission.

Kerstin Vaughn (Communication Studies/Theatre)
Dr. Elizabeth Bandy

4:10 p.m., Tolerton and Hood Hall 100

"The Color of Love: An Analysis of Interracial Relationships in Film"

Since Loving v. Virginia (1967) the number of interracial marriages has tripled and polls have shown an increase in acceptance of interracial relationships (Bialik, 2017). These relationships have a tumultuous history of abuse and rejection which continues to impact them today (de Guzman & Nishina, 2017; Viñas-Nelson, 2017). Media and art are cultural artifacts which reflect the values of a given time period. This study explores how films tell the changing story of interracial couples. This qualitative research expands the scope of previous research by covering a wider range of release dates and recognizing a variety of racial identities. Twelve films from 1957-present were studied through rhetorical and narrative analysis. Results of this research demonstrate the manner in which films tell the story of interracial relationships reflects society's increased acceptance of them. Continued research provides validity to their cultural contributions and recognition of the unique issues that surround existence.

Formal Presentation Abstracts

Jacob Frombach (Undeclared)
Dr. Nicole Johnson

1:50 p.m., Engineering and Business Building 206

"What is the big deal about the word "Redskins"?"

What is the big deal about the word "Redskins"? Who really cares about team mascots, anyway? The debate over the Washington Redskins' name and logo has been going on for years, with people on both sides raising intense arguments in support of their perspectives. Similar controversies have occurred over other mascots and logos in professional sports, such as the Indians, Blackhawks, and Seminoles. The term "redskins" has been used as slang for Native American people ever since the first Europeans came to the new world. Some Native American tribes see these mascots as degrading and offensive to indigenous culture, and believe that using their likeness as a mascot makes Native Americans seem like uncivilized savages. Those who support the use of Native American mascots claim that these images are meant to honor these groups and value their history and tradition. In this presentation, I will discuss the issue of using potentially offensive mascots in American sports. I explore a possible nuanced ethical response to this ongoing controversy and explain how my personal position on this issue changed through my research.

Ashley Griffin (Human Development and Family Science)
Judith Karlen (Psychology)
Megan Haynam (Psychology)
Taylor McMorrow (Human Development and Family Science/French)
Elizabeth Jones (Human Development and Family Science/Spanish)
Dr. Sarah Torok-Gerard

1:50 p.m., Tolerton and Hood Hall 101

"How Study Abroad Influences Perception of Diversity on Campus"

Study abroad, which has become popular in recent years, is an important topic of research for those in higher education-as well as those in the workforce-as individuals must learn to study and work effectively with those coming from diverse backgrounds. It's been concluded that study abroad can impact individuals' perceptions of racial and ethnic diversity (Clarke, Flaherty, Wright, & McMillen, 2009; Drews, Meyer & Peregrine, 1996; Terzulo, 2018). The current study will compare how students' perceptions of diversity at their home campus differ between those that have studied abroad and those that have not studied abroad. The current study will also examine if negative study abroad experiences and positive study abroad experiences differentially impact students' openness to diversity on their home campus. Participants include third and fourth-year students who have studied abroad and those who have not. Students will complete an online survey assessing perception of campus diversity, openness to diversity, and for those to whom it applies, their study abroad experience. We expect that students who have studied abroad will perceive campus differently and as less diverse, and be more open to diversity than those who haven't studied abroad. We also expect that students who have had a negative experience abroad will be less open to diversity than those who had a positive experience abroad.

Formal Presentation Abstracts

Ethan Griffith (Criminal Justice/Exercise Science)

Dr. Andy Bain

10:40 a.m., Engineering and Business Building 206

"Media Representation and Social Expectation of Law Enforcement in the United States"

According to Donovan and Klahm (2015) media is of great importance to the formation of attitudes towards policing. However, of the 53 million interactions with members of the public, arrests account for just 14 million contacts (BJS, 2018). This would suggest that almost 75% of all contact is for service calls only. This raises questions about public knowledge and expectation of service. The present study makes use of a content analysis, to examine reporting in the national news networks. Initial findings suggest that media reporting of negative interactions far outweighs any positive reporting, adding credence to Donovan and Klahm's original work.

Morgan Hamilton (Physics)

Dr. Richelle Teeling-Smith

2:10 p.m., Tolerton and Hood Hall 100

"Determining Nitrogen-Vacancy Center Density in Diamond using Magnetic Resonance"

Biologists have recently begun to use nanodiamonds as bright, florescent biomarkers. Florescence originates in transitions between the atomic-like, electronic energy levels of nitrogen-vacancy (NV) defects in diamond, composed of a nitrogen atom adjacent to a carbon lattice vacancy. Engineering brighter nanodiamonds generally requires higher concentrations of NV centers. Here, we aim to quantify NV densities from the intensity of their absorption spectrum peaks. To this end, we designed and characterized a tunable microwave cavity. For given cavity dimensions, Mathematica code was developed to visualize the resonant modes and calculate their resonant frequencies. From this, a magnetic resonance cavity could be designed, and it was demonstrated that the measured resonance frequency as a function of the cavity length matches the theoretical value very well. Coupling from a coaxial microwave line to the cavity was enabled using a loop antenna. By modifying the inductance of the loop, the quality factor of the cavity was enhanced by a factor of three. In conclusion, we have developed a tunable microwave cavity that can be made to resonate with NV spins.

Corbin Hershberger (Political Science)

Dr. Lori Kumler

2:10 p.m., Engineering and Business Building 203

"What Causes Youth to Recidivate: An Analysis of Ohio and Pennsylvania Juvenile Recidivism and the Factors that Cause Juveniles to Recidivate"

This study examines the effects that cause juvenile recidivism in Ohio and Pennsylvania during the years of 2007-2014. By examining the theories which are suggested to cause juvenile recidivism I came to the conclusion that four theories factor into causing recidivism the most. These theories are education, economics, substance abuse, and adult crime rates. All these theories affect youth either externally or internally. In the study, using a multiple regression analysis it was found that for the theories analyzed in Pennsylvania 33% of it explained why juveniles recidivate. The strongest determinate of recidivism in Pennsylvania was the population, people aged 5-17 and drug overdose deaths. The factors analyzed for Ohio explained 20.9% of what effects the recidivism rate. The strongest determinates for Ohio were the high school graduation rate and drug overdose deaths. These factors are important to understanding in order to prevent our youth from recidivating.

Formal Presentation Abstracts

Li Sun (Physician Assistant Studies)

Professor Vanessa Worley

10:40 a.m., Tolerton and Hood Hall 201

"Current and Emerging Healthcare Needs Call for Greater Involvement of Physician Assistants"

Have you ever seen a physician assistant (PA) instead of your primary care doctor? Did you know that PAs offer care in various specialties like cardiology, orthopedics, and neurology? PAs work on medical teams with doctors, nurses, and many other healthcare professionals. They work together, learn from each other, and further medical research. Studies shows that PA involvement leads to better health outcomes and higher levels of patient satisfaction. This systematic review aims to better understand how including PAs in team-based care can be beneficial to addressing several healthcare challenges, such as medical shortages in underserved areas and primary care, and increases in the prevalence of chronic illness in the aging population. PAs have been shifting the medical model for the last 50 years through interprofessional cooperation and efficient healthcare delivery; they will continue to help meet the nation's healthcare needs for the next 50 years and more.

Charles Swartz (Accounting)

Dr. Nicole Johnson

10 a.m., Tolerton and Hood Hall 101

"Nationalism, Nativism, Neo-Nazis: Historical Roots of White Supremacy in the US"

On August 11, 2017, the "Unite the Right" rally in Charlottesville, Virginia, gathered individuals with extreme ideologies in a confrontational, even physical altercation between white nationalists and the opposition, comprised of several varied interest groups. The aftermath of the encounter grabbed our nation's attention, further dividing an already polarized political and social landscape. This and similar events left many wondering how organizations, such as the Ku Klux Klan, could still exist in our "modern society" and how they continue to appeal to men and women generation after generation. After researching first-hand accounts of the formation, rise, fall, revival, and steady decline of the KKK, I discovered the underlying bond that has helped to sustain this organization in a continuously evolving society, and how we, as Americans, have misinterpreted their true motives for far too long.

Monty Al Ashoor (Civil Engineering)
Justin Cates (Civil Engineering)
Joe Datz (Civil Engineering)
Nathan Owen (Civil Engineering)
Dr. Yan Liu
1:50 p.m., Tolerton and Hood Hall 100
"ASCE National GeoWall Competition"
Since the Fall semester, our group has been working on a project called the GeoWall. Just recently, the team has competed in the National GeoWall competition at the GeoCongress in Philadelphia. The objective of the GeoWall competition is to design and build a model wrapped faced mechanically stabilized earth (MSE) retaining wall using Kraft paper reinforcement. A retaining wall is used to help reinforce unstable slopes to prevent potential landslides from occurring. The stability of the wall is created from the interaction between the soil and the reinforcements. The MSE walls help to distribute the loading across the area. The team traveled to Philadelphia to compete in the National competition, which was a long road over the past two semesters. Prior to preparing for the competition, the team spent most of the Fall semester performing the necessary research, lab testing, and designing to formulate the basis of the project. Through lab testing such as the direct shear test, sieve analysis, and the tensile strength test; important values, like the interaction angle, density, soil distribution and tensile strength, were found that led to creation and iteration of our GeoWall design. The design was created through implementing different concepts from Geotechnical engineering such as lateral pressure, impact loading, and geostatic stress. The wall had to withstand three different loading stages: a vertical static load, a horizontal static load, and a horizontal dynamic loading.

Hannah Reiheld (English)
Dr. Andrew Price
3:50 p.m., Tolerton and Hood Hall 100
"Hypermasculinity in Jack London and Ernest Hemingway"
For the sake of this senior English research project, research was conducted on the use of hypermasculine traits of male characters in both the works of Ernest Hemingway and Jack London. Hypermasculinity refers to the exaggeration of male stereotypical behavior. The term "hypermasculinity" is a relatively modern term, and thus, would not have been used to describe these characters at the time that they were written. By utilizing more modern research on hypermasculinity, along with research on what was going on with gender during Hemingway's and London's time, I have analyzed their characters for traits of hypermasculinity and the reasons that the authors used these traits. In this research project, I argue that where Hemingway actually believed in the hypermasculine value system and perpetuated his own beliefs in his writing, London's hypermasculine portrayals were actually a critique of twentieth century masculinity.

Hannah Hoover (Neuroscience/Biology)
Alycia Ciotti (Human Development and Family Science)
Rebecca Gillis (Psychology/Communication Studies)
Courtney Lallo (Human Development and Family Science)
Kaili Rasmussen (Psychology)
Dr. Kevin Meyer
1:30 p.m., Tolerton and Hood Hall 201
"The Effects of a Brief Napping Period on Auditory and Visual Memory"
The relationship between sleep and memory has been a prominent research topic, as improving memory is a factor that most, if not all, individuals would like to enhance. Participants of this study will consist of undergraduate students from the University of Mount Union, including male and female volunteers. The purpose of this experiment is to determine whether a brief napping period has an impact on auditory and visual memory through the use of a recall quiz process. It is hypothesized that those in the experimental group will perform better on the delayed auditory memory recall quiz compared to those in the control group. It is also hypothesized that those in the experimental group will perform better on the delayed visual memory recall quiz compared to those in the control group. The null hypothesis is that there will be no difference in test scores between the control and experimental group. As an interaction, it is hypothesized that both experimental and control groups will perform better on the delayed visual memory recall quiz compared to the delayed auditory memory recall quiz.

Eric Howell (Mechanical Engineering)
Ryan Spiker (Mechanical Engineering)
Amanda Sconyers (Mechanical Engineering)
Chandler Lameier (Mechanical Engineering)
Dr. Joshua Gargac
3:30 p.m., Engineering and Business Building 206
"SAE Baja Steering System"
SAE Baja is an intercollegiate design competition where undergraduate engineering students design, build, and race off-road vehicles. The competition consists of a 4-hour endurance race and short dynamic events meant to test the vehicle's suspension, acceleration, output torque, and maneuverability. Mount Union's vehicle has historically struggled to complete the maneuverability event. Therefore, the goal of this project was to design and build a new steering system for the existing Baja vehicle. New steering components were designed following the engineering design process. Briefly, contemporary steering systems were researched to better understand the purpose of different components. Possible design concepts were created and technical analysis was performed to select a final design. Finite element simulations proved the design would not fail under race conditions. As designed, the new system optimized the geometry of the vehicle's uprights, the part connecting the vehicle's front suspension and steering mechanism to the tire. The new uprights will be fabricated from 6061 T-6 aluminum. Overall, the new steering system should be more durable than previous designs and enable the vehicle to achieve an inside turning radius of 6 ft. Once installed on the existing vehicle, this steering system will be put to the test during upcoming races at Tennessee Tech on April 14th and Rochester, New York on June 9th. With the new steering system, will hopefully allow for a better placing than in the past years.

Uriel Ibarra-Moreno (Exercise Science)

Dr. Ronald Mendel

10 a.m., Engineering and Business Building 206

"The Effects of Stretching on Tolerated Range of Motion and Relaxation"

Stretch tolerance is accepted as the main contributing factor in limiting flexibility. Here, stretch tolerance is defined as the degree to which an individual can tolerate the sensations of tissue resistance and sensory discomfort when moving a joint through its range of motion (RoM). The pain experienced during stretching is modulated in the brain, and therefore, it is necessary to study stretching in terms of nociceptive input (i.e. pain signals from the body) to the brain. Using a relaxation questionnaire, the effects of stretching on brain activity will be measured. The questionnaire features 19-items scaled 1-5 (1 = strongly disagree, 5 = strongly agree) that ask about different aspects of physical relaxation. The intent of this study is to elucidate on the mechanism by which gains in flexibility are achieved. Although data collection and statistical analysis was not yet conducted at the time of submission, it is hypothesized that a short period of stretching will in fact increase RoM and relaxation within the brain. The potential impact of this research is that it will address a critical gap in the literature in an attempt to find the main factor in increasing flexibility. Also, it may drastically change the widespread utilization of stretch training seen in sports performance, recreational activities, and clinical settings.

Ethan Kawecki (Finance/Economics)
Lucy Baer (Finance/French)
Margaret O'Donnell (Finance/Marketing)
Mallory Wahl (Finance/Accounting)

Professor Holly Lucas

3:50 p.m., Engineering and Business Building 203

"Student Travel Analyzed Through the Lens of Enterprise Risk Management "

"Risk Comes from not knowing what you're doing."- Warren Buffet. This quote from Warren Buffet explains the general basis behind enterprise risk management. Which is to forecast and attempt to avoid or minimize risks; the failure to actively analyze and address risks can be catastrophic. The University's Risk Management and Safety Committee consulted our Risk Management and Insurance class to obtain student insights related to the current concerns and potential liabilities related to student travel. Throughout the course students had the opportunity to work alongside the committee to identify loss exposures, produce a heat map, and come up with ideas on how to address the loss exposures. The class was tasked with analyzing the University Travel Policy; a predominant and distinct risk that the University faces is the aspect of student travel. Student organization travel, faculty-led trips, and athletic travel all pose a large liability for the University as students participate in these school-sponsored arrangements. While the University of Mount Union has excellent risk management techniques to mitigate potential losses concerning university travel, there is always room for improvement. The project used common techniques from the field of enterprise risk management to help analyze and improve the University's travel policy. A key aspect was benchmarking the University of Mount Union's travel policy with that of comparable universities. Overall, the goal of this presentation will be to explain the detailed process through which loss exposures are identified how the University of Mount Union will address the risks.

Formal Presentation Abstracts

Masashi Nishiguchi (Mathematics/Mechanical Engineering)

Dr. Michael Zwilling

10:20 a.m., Tolerton and Hood Hall 201

"Mathematics of Curved 3D Origami"

Origami is a style of paper art that is done by folding a square of paper without cutting and allows us to create a variety of shapes from a sheet of paper. Recently, by taking advantage of computer science, origami has evolved and many new and beautiful origami art works have been created by "origamists", who study origami. Jun Mitani is one of the best origamists who use computers to analyze origami. He introduced a notation for curved origami, which has curves on its crease pattern. Curves on a crease pattern cause the paper to have wave and strain but also to have a beautiful smooth shape and artistic shade pattern on the art work. In my research, I used not only his notations for curved origami and techniques for designing curved origami but also the mathematics behind curved origami including developable surfaces and ruling lines.

Nicole Ochs (Physician Assistant Studies)

Professor Vanessa Worley

3:30 p.m., Tolerton and Hood Hall 201

"Initiation of Medication-Assisted Therapy in the Emergency Department for Patients with Opioid Use Disorder"

Emergency departments (EDs) are on the front lines of the opioid epidemic, reversing overdose and managing withdrawal. Patients receiving this care usually leave the ED with only a referral to a treatment center. For various reasons, patients struggle to connect with the drug rehabilitation center, but their long-term treatment is not started until care is established there. Rather than delaying necessary and life-changing interventions, some have considered the introduction of medication-assisted therapy (MAT) in the ED. While the approach has been effective in recent studies, it is not standard of care. This systematic review seeks to determine if initiation of MAT in the ED is feasible and efficacious in the prevention of future overdoses in patients with opioid use disorder. Naloxone (Narcan) is a reversal agent that treats overdose. Other medications treat withdrawal symptoms. MAT is for the addiction. All are needed, but MAT actually helps begin the recovery process.

Leah Kehner (Neuroscience)
Hunter Mattern (Neuroscience)
Alex Uhas (Psychology/Criminal Justice)
Kelly Barley (Psychology)

Dr. Tamara Daily

3:30 p.m., Tolerton and Hood Hall 101

"The Impact of Perceived Test Difficulty on Physiological and Self-Report Emotions"

In any level of schooling, test taking and getting good grades is important. Stress associated with test taking can impact the academic performance and health of college students. While there has been research on anxiety and other negative emotions experienced during exams and emotions affecting heart rate, there has been very little research on the connection between perceived test difficulty, negative emotions, heart rate, and oxygen saturation. By testing these variables in the proposed study, we hope to get a better understanding of how perceived test difficulty impacts students physically and emotionally. We expect that perceived test difficulty will influence negative emotions and heart rate/oxygen saturation. The findings from the proposed study may help students understand how their emotions before an exam can impact how they feel after they are finished.

Susan Mantkowski (Physician Assistant Studies)

Professor Vanessa Worley

2:10 p.m., Tolerton and Hood Hall 101

"MammoSite Brachytherapy: A New Type of Breast Radiation that Delivers Treatment Internally"

According to the American Cancer Society, 1 out of 8 women will develop breast cancer in their lifetime. Radiation therapy is common in the treatment of breast cancer. Historically, clinicians apply external beam radiation to the entire breast, which can leave patients with skin irritation (such as peeling or blistering), fatigue, swelling, nerve and surrounding tissue damage. More recently, a technique called intracavitary brachytherapy, or MammoSite, has been developed. Following surgery to remove cancer, a small implantable device like a balloon is temporarily placed in the affected breast to deliver radiation to only that portion of the breast where the cancer had been. Through a systematic review of literature, this paper seeks to determine if intracavitary brachytherapy can provide the same effectiveness as external beam radiation, while avoiding the potential negative outcomes. The findings may guide clinicians and patients in determining a treatment plan that includes comfort and cure.

Savana Marsh (Spanish)

Dr. Gregg Courtad

2:10 p.m., Engineering and Business Building 206

"Fidel Castro's Rise to Power in Cuba"

During Fall of 2018, I conducted a research project about Fidel Castro's rise to power in Cuba. I reviewed various articles, books, interviews, and documentaries to gather information about how Fidel Castro became the person he was. Starting from his childhood and going through events that occurred up until his death, I was able to put together a timeline describing what made Fidel Castro such a powerful dictator. As a Spanish major, this research gave me insight into a topic that is huge in the Spanish-speaking world, and I think that I found out information that many people are unaware of. Did you know that Fidel Castro was a star athlete?

Aaron Merriman (Political Science)

Dr. Lori Kumler

1:30 p.m., Engineering and Business Building 203

"'It's the Economy, Stupid': The Impact of Economic Conditions in the Rust Belt on the 2016 Presidential Election"

The 2016 American presidential election was highly unique in that several states, some of which had historically voted strongly Democratic, switched their support to the Republican Party. In this study, I examine the effect of economic conditions in the Rust Belt on the election compared with demographics and party affiliation. I collected economic, demographic, and voter registration data from fifty counties in Michigan, Ohio, Pennsylvania, and Wisconsin, as well as voting percentages for Hillary Clinton and Donald Trump. These states were considered swing states in the election, and Trump's victories in these states gave him enough electoral votes to become President. My cases were counties in those states with populations of over 200,000 (using 2010 Census data), as well as the county in each state with the highest percentage of Clinton and Trump votes regardless of population. I then created a linear regression model; percentage of Trump votes was the dependent variable and economic, demographic, and voter registration data were independent variables. While some economic factors such as poverty rate (= -.549) were important in determining support for Trump, they were not as important as party affiliation. Counties with higher percentages of registered Republicans (= .868) and unaffiliated voters (= .744) were more likely to support Trump. These results could hold many future implications; Democratic presidential candidates may have to prioritize economic growth and job creation in the Rust Belt if they are to win this area of the United States in future elections.

Alexandra Colacino (Physician Assistant Studies)
Kennady Miller (Exercise Science)

Dr. Ronald Mendel

1:50 p.m., Tolerton and Hood Hall 201

"Handgrip Strength and Functional Fitness in Wheelchair-Bound Individuals"

The purpose of this study is to investigate the functional fitness of manual wheelchair (MWC) users with a modified version of the senior fitness test. Researchers assessed the correlation between handgrip strength and functional parameters including distance traveled (m), time to complete assessments (s), gait speed (m/s), turn time (s), and cadence (pushes/min). Significance: Previous studies (Alonso et al., 2018, Braun et al., 2018) showed handgrip strength as a good indicator of performance on physical assessments in walking individuals. To our knowledge, no studies have correlated handgrip strength in MWC users to performance on functional assessments. If handgrip strength is found to be positively correlated with performance, it would support the idea that maintaining and improving handgrip strength could lead to improved performance completing activities of daily living (ADLs) and increased quality of life for MWC users. Methods: 8-14 (pending) subjects, male and female, aged 40 who used a MWC as their primary form of mobility, took part in this study. Researchers recorded medical and fall history, perceived ability to complete ADLs, and basic measurements. Subjects completed physical tests including a handgrip strength assessment, 30-second Transfer Assessment, three different trials of the Lift-and-Carry Task, 400-meter Wheel Test, and Chair Sit-and-Reach Test. The majority of tests were assessed using a self-developed cell phone application. Results: Data collection is still underway so there are no data to report yet. However, preliminary data supports our research hypothesis that there is a positive correlation between handgrip strength and functional fitness.

SCHOLAR Day Activities

April 30, 2019

9-9:45 a.m.	**Poster Session I**, Giese Center for the Performing Arts (Participants listed in program. Snacks provided.)					
10-11 a.m. **Presentation Session I**	**Start**	**T&H 100**	**T&H 101**	**T&H 201**	**EBB 203**	**EBB 206**
	10 a.m.	**Spanish** Jacqueline Vega	**Accounting** Charles Swartz	**Psychology/Human Development and Family Science** Brittany Zupancic, Victoria Nash, Lena Zumack, Nicole Mace	**Civil Engineering** Nicholas Brish, Phillip Mary, Trevor Cox, William Goodall	**Exercise Science** Uriel Ibarra-Moreno
	10:20 a.m.	**Writing** Ryan Ditrick	**Japanese** Travis Wylie	**Mathematics** Masashi Nishiguchi	**Exercise Science** Dillon Frees, Barry Myers	**Physician Assistant Studies** Christopher Ward
	10:40 a.m.	**Writing** Sarah Donkin	**Psychology** Tirzah Curry, Lou Marich, Allison Erisey, Logan Coe, Joshua Petkash	**Physician Assistant Studies** Li Sun	**Mechanical Engineering** Zachary Dozier, Kathleen Allen, Gunnar Maher, Thomas Petrella	**Criminal Justice** Ethan Griffith
11:30 a.m. - 12:30 p.m.	**Senior Recognition and Honors Convocation**, Timken Gymnasium, McPherson Academic and Athletic Complex					
12:30-1:30 p.m.	**Picnic Lunch for Participants and Guests**, Peterson Field House, McPherson Academic and Athletic Complex					
1:30-2:30 p.m. **Presentation Session II**	**Start**	**T&H 100**	**T&H 101**	**T&H 201**	**EBB 203**	**EBB 206**
	1:30 p.m.	**Mechanical Engineering** Michael Delsanter, Daniel Robinson, Michael Shull	**Physician Assistant Studies** Raegan Baxter	**Psychology/Neuroscience/Human Development and Family Science** Hannah Hoover, Alycia Ciotti, Rebecca Gillis, Courtney Lallo, Kaili Rasmussen	**Political Science** Aaron Merriman	**Communication Studies** Graycen Wood
	1:50 p.m.	**Civil Engineering** Nathan Owen, Justin Cates, Joe Datz, Monty Al Ashoor	**Psychology/Human Development and Family Science** Ashley Griffin, Judith Karlen, Megan Haynam, Taylor McMorrow, Elizabeth Jones	**Exercise Science/Physician Assistant Studies** Kennady Miller, Alexandra Colacino	**History** Brianna Boehlke	**Undeclared** Jacob Frombach
	2:10 p.m.	**Physics** Morgan Hamilton	**Physician Assistant Studies** Susan Mantkowski	**Human Development and Family Science/Psychology/Neuroscience** Brittany Blankenship, Alaina Fuller, Chloe Miller, Mitchell Morris	**Political Science** Corbin Hersberger	**Spanish** Savana Marsh
2:30-3:15 p.m.	**Poster Session II**, Giese Center for the Performing Arts. Participants listed in program. Snacks provided.					
3:30-4:30 p.m. **Presentation Session III**	**Start**	**T&H 100**	**T&H 101**	**T&H 201**	**EBB 203**	**EBB 206**
	3:30 p.m.	**History** Noelle Boyd	**Neroscience/Psychology and Criminal Justice** Leah Kehner, Hunter Mattern, Alex Uhas, Kelly Bareley	**Physician Assistant Studies** Nicole Ochs	**Political Science** Spencer Whyte	**Mechanical Engineering** Eric Howell, Ryan Spiker, Amanda Sconyers, Chandler Lameier
	3:50 p.m.	**English** Hannah Reiheld	**Physician Assistant Studies** Mackenzie Berry	**Neuroscience/Psychology** Bethany Cox, Samantha Pechkurow, Taylor Castle, Abigail Van Auken, Madeline Poldruhi	**Finance** Ethan Kawecki, Lucy Baer, Margaret O'Donnell, Mallory Wahl	**Mechanical Engineering** Wylie Brown, Gage Lau, Kyle Herman, Michael Falcone
	4:10 p.m.	**Communication Studies** Kerstin Vaughn	**Exercise Science** Samuel Todd	**Physics** Ian Dilyard		