This lecture, honors Dr. Gordon L. Kirkland Jr., professor of biology, and Dr. Joseph A. Spizuoco, professor of physics for their dedication and commitment to Shippensburg University students and their respective academic fields.

In the popular imagination, science is a collection of arcane facts that only a minority of people are capable of understanding. In reality, science is a process for generating knowledge by looking at the world, thinking of possible explanations for interesting phenomena, testing those models by observation and experiment, and telling the results of those tests to others. This process is an essential human activity. This talk explains how everyday activities like card games, crossword puzzles, and sports make use of the same mental tools scientists have used to revolutionize our understanding of the universe.

Chad Orzel is a professor at Union College in Schenectady, New York, and the author of four books explaining science for non-scientists: How to Teach Quantum Physics to Your Dog and How to Teach Relativity to Your Dog, which explain modern physics through imaginary conversations with Emmy, his German shepherd, and Eureka: Discovering Your Inner Scientist, on the role of scientific thinking in everyday life. His latest book, Breakfast with Einstein: The Exotic Physics of Everyday Objects, explains how quantum phenomena manifest during the course of ordinary morning activities. He has a BA in physics from Williams College and a PhD in chemical physics from the University of Maryland, College Park, where he did his thesis research on collisions of laser-cooled atoms at the National Institute of Standards and Technology in the lab of Bill Phillips.

FREE AND OPEN TO THE PUBLIC.
For more information, please contact Kate Shirk, (717) 477-1114, KBShirk@ship.edu.
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From the President

Welcome to the Minds@Work Conference at Shippensburg University celebrating student research, scholarship, and creativity. The conference demonstrates the rigorous and vibrant academic programs we offer and showcases the quality of our student/faculty interactions through joint student/faculty research.

The Minds@Work Conference also highlights the high-quality, high-touch education our students receive inside the classroom. It showcases the many benefits undergraduate research has on enhancing those skills that are central to the life our students will lead when they move on from the university. Whether our students pursue a professional degree or enter the industries that drive our state and community, students will do so having enhanced oral and written communication and critical thinking skills through the creative and scholarly activities found within our undergraduate research activities.

Our undergraduate research is an important ingredient in engaging students in collaborative, service, and community-based learning projects. These high-impact practices increase student retention and engagement with the university experience. I am so very proud of our student-scholars for the hours they have dedicated to producing what is so proudly illustrated in today’s presentations.

The research you see today is the culmination of the hard work of our students, so, thank you, students for engaging in creative inquiry and for bravely displaying your work here today. It takes great courage to set out every day to grow the body of knowledge in your respective area of interest. Thank you, too, to our faculty for dedicating your time and expertise to our students. I also am grateful for the investment our donors make. Donor contributions accentuate the importance of student-faculty research and today’s conference. Thanks to each of you for your commitment to our university and for your contributions to a broader understanding of the world.

Laurie A. Carter, JD
President

From the Interim Provost and Vice President for Academic Affairs

Shippensburg University has established the tradition of gathering together in April to celebrate our students’ scholarly and creative achievements at the annual Minds@Work conference. Minds@Work is more than a celebration; it is the representation of the value our campus places on delivering high-impact learning experiences to our students. This wonderful conference is a showcase that represents undergraduate research and creative activities, a signature activity for Shippensburg University accomplished through student collaboration with, and mentorship, by one or more members of our talented faculty.

The most meaningful and effective learning experiences happen when faculty and students work closely together, one-on-one or in small groups, on disciplinary projects outside of the formal classroom. The work expands the boundaries of human knowledge and experience, providing students the opportunity to contribute uniquely to their disciplines while simultaneously experiencing personal and professional growth. Students develop important skills in teamwork, collaboration, writing, problem solving, and communication. Students also develop distinctive insights into the power of guided inquiry, critical thinking, and design thinking for approaching issues they are likely to encounter as they enter the working world or engage in advanced study in graduate or professional schools. Importantly, Minds@Work provides students the opportunity to hone their projects. Often, participants will present their work at regional, national, or international conferences. Sometimes, Minds@Work projects set the stage for students to become coauthors on scholarly publications. Congratulations to the students presenting their work and to their faculty mentors. Many thanks to the faculty and staff who have spent countless hours working to organize Minds@Work and who have worked with the students to prepare them. Thank you, too, to the SU Foundation for its tireless efforts in providing support for the Joint Faculty-Student Research Program. We look forward to, once again, discovering new insights from our students and faculty and to a successful and meaningful experience for our campus. Welcome to all, and thank you for being here to support our students and faculty in this high-impact experience!

James H. Mike, PhD
Interim Provost and Vice President for Academic Affairs
From the Interim Dean, College of Arts and Sciences

A meaningful education has many interacting components. The opportunity for students to master content knowledge and develop skills is brought full circle when they can contribute to new knowledge themselves. Working on an independent research project, scholarly activity, or creative activity provides a forum for students to delve deeper into the existing body of knowledge, practice critical skills, and participate in design and discovery.

The impact of student research and creative projects is far reaching, and collaborative work of students and faculty together results in professional growth for all involved. Students develop comprehensive understanding of concepts, with in-depth study of topics that expand beyond their work in classes. Important skills in communication, problem solving, leadership, and teamwork will contribute meaningfully well past the duration of the project. Faculty are also invigorated by the chance to delve into new areas of exploration, which feeds into an educational cycle where the work in and out of the classroom synergize with each other.

While we recognize the benefits of student-faculty research and creative activities on many levels, the deep engagement is a reward in itself. Learning how to answer your own questions can be a transformative experience, not to mention that the process of discovery is just plain fun.

Thank you to everyone in the Shippensburg University community for the support of this critical endeavor.

Sherri Evans Bergsten, PhD
Interim Dean, College of Arts and Sciences

From the Dean, John L. Grove College of Business

Minds@Work—what better way to showcase the brilliant ideas/talents of our business students with our broad base of faculty skilled in so many avenues of research! Students are enthusiastic about taking the knowledge they have gained in the classrooms and showing their creativity as they apply these skills through projects/research.

The Grove College of Business mission is to provide a high-quality and high-value comprehensive experience that prepares students to excel as principled leaders in today’s global business community. As students and faculty join forces to achieve these goals, bonds are created, success is achieved, and self-worth is attained.

I am very proud of the John L. Grove of Business faculty and student participation in Minds@Work and encourage more faculty/students to become involved in this great initiative.

John G. Kooti, PhD
Dean, John L. Grove College of Business
From the Dean, College of Education and Human Services

In my conversations with employers, community thought leaders, community change agents, faculty in graduate programs, and other stakeholders, I am continually reminded about the power of critical thinking, problem solving, analytic, visioning, and communication skills. What education, social services, and thriving communities need are individuals equipped with these skills and prepared to serve with integrity in how they enact those skills. The Minds@Work Conference provides an occasion for our students to demonstrate their burgeoning skills as scholars, leaders, and professionals who are willing to embrace learning opportunities that advance scholarly discourse and broaden and deepen their academic skills. The hallmark of the student experience in the College of Education and Human Services is Leadership through Service. We are preparing professionals who will be transformative in their communities of practice and will serve the public good, whether in education, social work, counseling, exercise science, criminal justice, or military science. Research and inquiry supported through the university and college provide our students the foundation for being effective leaders in their chosen profession as they understand how to optimize the potential of individuals and groups.

The Minds@Work Conference provides an opportunity for our students to showcase their emerging skills as scholar-practitioners and to capture the impact of research collaboration with faculty members. Our faculty are highly engaged in research that informs educational practices, human service delivery processes, criminal justice methods, and physiological facets of health. Our students benefit from our faculty’s cultivation of their scholarly identities and the integration of professional and research-based experiences into the classroom environment. One of our goals in the College of Education and Human Services is to instill a sense of responsibility, commitment, and professionalism in our students who provide service to people and institutions. Research experiences at the undergraduate level expand our students’ understanding of their responsibility to examine critical questions, apply critical thinking skills, engage in sequenced planning, and develop strategic problem solving practices. These skills allow our students to be agile as committed professionals in fields that serve complex, dynamic, and multidimensional individuals and systems.

The mission of the College of Education and Human Services is to prepare students to become competent human service professionals by providing leadership directed toward encouraging collaboration to develop and apply theory, research, policy, resources, practices, and innovative models. Participating in research collaboration with faculty and the Minds@Work Conference positions our students to be prepared to tackle the demands of highly complex and change-driven professions while exemplifying the characteristics of leaders. I am proud of our faculty and students who actively pursue research inquiry and who elect to showcase their work in the Minds@Work Conference.

Nicole R. Hill, PhD
Dean, College of Education and Human Services
Acting Dean, School of Graduate Studies

On Behalf of Faculty

I’d like to include one of Albert Einstein’s quotes on my syllabus for HCS360: Research Methods in Communication:

“If we knew what it was we were doing, it wouldn’t be called research would it?”

The production of knowledge through the research process means engaging in critical and creative thinking for which there often isn’t a rubric or a checklist to follow. Instead, we grapple with uncertainty and learn how to interpret seeming failures and insignificance as one type of important outcome. Whether we are engaged in research as physical scientists, musicians, social scientists, artists or writers; whether we employ experiential or experimental designs; whether our findings are distilled in tables or expressed in performance art, when we engage in research we are engaged in the production of knowledge.

At Shippensburg University, we have transcended the Western model of higher education in which faculty members produce knowledge and impart that experience and information through lecture to their students. Instead, we lead the way in a collaborative construction of knowledge through the enterprise of faculty-student research across the disciplines that comprise our campus.

Engagement in the research process requires a commitment to a rigorous and time intensive enterprise that exceeds the normal scope of producing or assessing coursework, papers, and exams. Students who participate in both course based and co-curricular research projects are often found in labs, in meetings with group members and faculty mentors, and committed to the public presentation of their work. Faculty members who supervise students’ research activities lend their expertise beyond the topics of the courses taught, teach modes of inquiry and investigation outside of their credit hour workload, and spend time preparing and guiding students for presentations at conferences such as Minds@Work. Faculty-student research is thus both a process and a product of our faculty’s commitment to the engagement of our students in meaningful and transformative undergraduate education.

Einstein’s question drives directly to the heart of research: The systemic yet messy, exhausting but exhilarating, forward moving but often circular, creation of knowledge. Research requires the courage to move beyond what we know and plunge in to uncertainty, using only a set of methods or procedures as a guide. With practice, training, and some good luck, we come to the other side and make a contribution to the collective knowledge. Here at Shippensburg University, we make that contribution together.

Kara Laskowski, PhD
Human Communication Studies Department
APSCUF-SU President
From the Institute for Public Service and Sponsored Programs

By time-honored tradition, research and public service are identified alongside teaching as essential components of a vital university. SU’s Institute for Public Service and Sponsored Programs (IPSSP) serves as a behind-the-scenes research and service facilitator. We help students and faculty shape their research and project goals, and we then help find the funding needed to turn plans into reality.

We play an active role in making the university’s commitment to student research and creative expression a fully realized endeavor. In addition to funding and coordinating the Minds@Work Conference, IPSSP oversees the annual Undergraduate and Graduate Research Grant Programs.

Student research and creative inquiry bring practical benefits because they represent firsthand experience in critical thinking, planning and project management, and communication. When these skills are challenged and focused through the mentorship of our dedicated faculty, we end up with the annual event known as Minds@Work.

To all of those involved in the endeavors resulting in today’s conference, I say, “Thank you.” Please enjoy the event and appreciate the hard work of all who made it possible.

Christopher Wonders, Director

From the Advisory Council on Student Research and Creative Activities

We are searchers. Perhaps above all other pursuits, we human beings search. Our days are driven by tiny quests—we look for the best parking spot, scroll through the Internet for a bargain, try to pick the ripest bananas at the grocery store. In a larger sense, our lives often take shape around searching for companionship, and for many the search for ways to be a better parent. Our careers are defined by searches. Scientists hunt for a cure for cancer. Astronomers map the cosmos. Poets chart the caverns of the human heart. Professionals agonize over better ways to care for the elderly, to balance the scales of justice, to educate our young, to maximize our resources, to push technology so far it seems like magic.

Why? In the face of the indisputable fact that our understanding will always be flawed, our comprehension forever incomplete, why do we grope in the vast unknown for some sliver of illumination? Maybe the answer lies in the nature of the question itself. For we are creations compelled by curiosity. From the moment we emerge from the womb, we yearn to know more.

It is the sacred duty of institutions of higher education to help students understand the keystone concepts associated with their fields and apply that knowledge. But beyond this, superior schools inspire students to seek new truths and insights, and then to share this incipient wisdom, contributing to the grand conversation.

Here at Ship, our budding scholars are mighty seekers indeed. The Minds@Work Celebration honors their efforts and achievements.

Neil Connelly and Marguerite Albro
Co-chairs, Advisory Council on Student Research and Creative Activities

Advisory Council for Student Research and Creative Activities Committee 2018-2019

Albro, Marguerite
Armen, George
Baek, Seunghyun
Becker, Wendy
Braun, William
Campbell, Jamonn
Cella, Laurie
Crochunis, Thomas
Dieterich-Ward, Allen
Feeney, Alison
Fic, Christy
Flagler, Marita
Frielle, Thomas
Grove, Sara
Kegerreis, Jeb
Klein, Kim
Knight, Misty
Lang, Eveline
Lee, Jeonghwa
Lee, Sangkook
Lesman, Robert
Moll, Kirk
Pomeroy, George
Potoczak, Kathryn
Renault, Marc
Royce, Christine
Sanders, Joohee
Senecal, Christine
Shirk, Kathryn
Smith, Josefine
Thomas, Nathan
Whistler, Scott
Windholz, Jordan
Wonders, Christopher
Yang, Ying
Zaleski, Curtis
The Library Research Award was developed in 2009 by the faculty and administration of the Ezra Lehman Memorial Library, in conjunction with the Institute for Public Service and Sponsored Programs and the Council on Student Research. The annual award recognizes the best literature review submitted by students who have received grant support for their participation in the annual Minds@Work Conference or by conducting other research with a faculty mentor. The first prize recipient receives a $1,000 cash prize and the honorable mention recipient is awarded a $500 prize. Commemorative posters will be made of the winners and the posters will be displayed in the library.

The Library Research Award is made possible by the generous support of Berkley and Carol Laite (SU Classes of 1967 and 1965, respectively). The winners will be announced and awards presented at the Kirkland/Spizuoco Memorial Science Lecture at 7:30 PM on Monday, April 22 at the Luhrs Performing Arts Center.

*Not all Undergraduate Research Grant Recipients will be presenting their research at this year’s conference due to the timing of the conference and nature of their research.*

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**UNDERGRADUATE RESEARCH GRANT RECIPIENTS 2018-2019**

<table>
<thead>
<tr>
<th>Rebecca Akrong</th>
<th>Brandon Fisher</th>
<th>Allyson Lutz</th>
<th>Shelby Rhoten</th>
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<tr>
<td>Jhosuy Alcantara Mejia</td>
<td>Hannah Fisher</td>
<td>Victoria Madrak</td>
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<td>Megan Allison</td>
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<td>Nathan Gardner</td>
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<td>Drew Barrett</td>
<td>Patrick Hadley</td>
<td>Courtney Merwin</td>
<td>Alyssa Smihosky</td>
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<td>Dylan Beaver</td>
<td>Clayton Hartman</td>
<td>Haley Miller</td>
<td>Makayla Smiley</td>
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<td>Gabrielle Binando</td>
<td>Minerva Hecker</td>
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<td>Geraldo Irizarry</td>
<td>Jessie Nagle</td>
<td>Angelina Stewart</td>
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<td>Samantha Bray</td>
<td>Jack Jenkens</td>
<td>Mary Newman</td>
<td>Emily Stottemeyer</td>
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<td>Carrie Brough</td>
<td>Kendall Johnson</td>
<td>Levi Nicklas</td>
<td>Adriana Townsend</td>
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<td>Chrislyn Cabonilas</td>
<td>Robert Joyce</td>
<td>Sarah Nocito</td>
<td>Mariah Varner</td>
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<td>Kaitlyn Chenard</td>
<td>Brittany Keller</td>
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<td>Ryan Cleaver</td>
<td>Susanna Keyes</td>
<td>Nora Ormsbee</td>
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<td>Monica DeCarlo</td>
<td>Alicia Klinger</td>
<td>Megan Pine</td>
<td>Brody Weibley</td>
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<td>Emma Dolan</td>
<td>Maura Kreiser</td>
<td>Grace Ramacciotti</td>
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<td>Caitlin Dull</td>
<td>Haley Larney</td>
<td>Sven Ramstrom</td>
<td>Cory Woolf</td>
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<td>Dwayne Ellis</td>
<td>Alex Lewis</td>
<td>Lucas Rankin</td>
<td>Kaitlin Yealy</td>
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<tr>
<td>Bridget Finniff</td>
<td>Shannon Loney</td>
<td>Logan Redcay</td>
<td>Lane Yutzy</td>
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**EZRA LEHMAN MEMORIAL LIBRARY RESEARCH AWARD**

The Library Research Award was developed in 2009 by the faculty and administration of the Ezra Lehman Memorial Library, in conjunction with the Institute for Public Service and Sponsored Programs and the Council on Student Research. The annual award recognizes the best literature review submitted by students who have received grant support for their participation in the annual Minds@Work Conference or by conducting other research with a faculty mentor. The first prize recipient receives a $1,000 cash prize and the honorable mention recipient is awarded a $500 prize. Commemorative posters will be made of the winners and the posters will be displayed in the library.

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Minds@Work

DEPARTMENTAL CONFERENCE PANELS
BIOLOGY

TIME: 3:30–6:15  LOCATION: MPR A

Biology Research Oral Symposium

This session includes oral presentations by undergraduate and graduate student researchers in the Department of Biology. There will be eleven presentations that highlight the wide range of research topics, from molecular biology to ecology, undertaken by Shippensburg University Department of Biology. Several talks address the presence of particular pathogenic bacteria in milk, organic foods, and conventional foods. Additional topics of presentations examine molecular, immunological, genetic, and viral techniques used to detect the presence of disease-causing microbes, explore the dynamics of pathogen-host interactions, and control gastrointestinal pathogenic bacteria. Finally, there will be presentations on the distribution, morphology, diversity, and conservation of fish, amphibians, and reptiles. These ecological studies address population and community structures in the context of abiotic and biotic factors, with emphasis on anthropogenic effects.


Faculty Sponsor(s): Pablo Delis, Alison Fedrow, Marcie Lehman, Theo Light, William Patrie, Richard Stewart

CHEMISTRY AND BIOCHEMISTRY

TIME: 7:00–8:00  LOCATION: MPR A

Biochemistry Library Research Poster Project

Scientists must frequently communicate complicated ideas and systems to other scientists and the general public. In order for biochemistry students to practice presenting scientifically complicated concepts we have an annual biochemistry poster session where faculty critique the students’ communication skills. This session will provide the opportunity for these same students to present these topics to the general public. Students have researched a general biochemical topic and understand journal articles related to that topic. They have put this information together into a poster they orally present. Topics presented will include information on things like why snake venom is toxic, how a low carbohydrate diet leads to weight loss, how various medications work and many more.


Faculty Sponsor(s): Robin McCann

TIME: 3:30–6:30  LOCATION: 119

Undergraduate Research Projects in Chemistry and Biochemistry

This symposium will focus on the research projects performed by undergraduate students in the Department of Chemistry and Biochemistry. Research projects will include topics from the disciplines of analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, and physical chemistry.

Rebecca Akrong, Caleb Ancharski, Nick Bigham, Brittany Keller, Maura Kreiser, Alex Lewis, Shannon Loney, Sven Ramstrom, Lucas Rankin, William Seller, Noah Shandor, Alyssa Smihosky, Curtis Zaleski

Faculty Sponsor(s): Curtis Zaleski
COMMUNICATION/JOURNALISM

TIME: 7:15–8:30  LOCATION: 104

Communication/Journalism Capstone Projects

Communication/journalism seniors will showcase capstone experiences through multimedia and public relations projects. Student projects from electronic media, print and online media and public relations demonstrate storytelling, production, research and critical thinking skills. The panel will include discussion of best practices and challenges.

Carley Erisman, Molly Foster, Brandon Glorioso, Shannon Long, Gillian Mencken, Kayleigh Purcell, Michael Smith, Logan Wein, Matthew Weisbecker, Jenna Wise

Faculty Sponsor(s): Carrie Sipes

COMPUTER, ELECTRICAL, AND SOFTWARE ENGINEERING

TIME: 3:30–4:00  LOCATION: 103

Mobile App Using IOT Beacons for Precise Geographical Location

We built an Android App that interacts with IOT beacons to give users content based on their precise locations. There are a variety of applications where this could be deployed. E-Marketing could use it to do things like give you a coupon when you are near a store or show you a menu when you are near a restaurant. Tourism could use it to run self-guided tours. The university could use it to make a scavenger hunt at orientation to help students learn where things are on campus.

Dennis Fleagle, Kevin Marek, Courtney Rush, Austin Smale, Ace Walker, Gabe Webbe, CJ Woltz

Faculty Sponsor(s): Carol Wellington

ENGLISH

TIME: 4:30–5:30  LOCATION: 104

ENG 307 Students Presentation: Poetry Here and Now

This panel features original work from the writers in Introduction to Poetry Writing (ENG 307). These poets will present a variety of unique voices and styles inspired by contemporary poetics.

Delana Burrell, Donald Dayton, Anna D'Orazio, Danielle Enck, Mia Furby, Megan Gelsinger, Robert Greenberg, Marissa Kiser, Andrea Kling, Kelsey Kohler, Erika Mundock, Rachel Nazay, Jenna Nelson, Nicole Potts, Desiree Sourbeer

Faculty Sponsor(s): Nicole Santalucia

MEMORY AND LITERATURE:

TIME: 5:00–5:45  LOCATION: ORN 123

Memory and Literature: Panel Presentation

This panel of student presentations will feature the work of students in the spring 2019 Honors Introduction to Literature class.

Andrew Aumen, Carson Pennings, Carl Potter, Trevor Woolwine

Faculty Sponsor(s): Thomas Crochunis

THE PERSONAL AND THE POLITICAL:

TIME: 3:30–4:30  LOCATION: 104

The Personal and the Political: Poets Speak Out

This panel features poets from Santalucia's Advanced Poetry Workshop (ENG 427). These students will present original poetic work, discuss the personal, the political, and the art of description.

Danielle Banda, Kyra Brown, Courtney Caro, Moriah Hathaway, Courtney Hoch, Kady Keck, Casey Leming, Shreya Long, Savannah Manetta, Trisha McMullen, Mikayla Mellinger, Nathaniel Mull

Faculty Sponsor(s): Nicole Santalucia

WRITING VIRTUE AND VICE IN THE 18TH CENTURY

TIME: 4:45–6:00  LOCATION: 238

Writing Virtue and Vice in the 18th Century

This session will feature a mix of creative performances and poster presentations that engage with and adapt 18th-century texts whose ideas about identity and power remain important today. Work will be performed and/or presented by students in English 377: The Long 18th Century. Anyone interested in cultural critique, history, crime, gender, writing, and theater should find the session of interest.

Courtney Caro, Sarah Davison, Luke Hershey, Andrew Houpt, Derek Letts, Brandon Morgan, Cassandra Smith, Paige Van Hoogt

Faculty Sponsor(s): Sharon Harrow
EXERCISE SCIENCE

TIME: 3:30–5:30  LOCATION: 232

Mechanical Analysis of Sports Skills

This panel features a selection of noteworthy student projects from the Mechanical Analysis of Sports Skills course (ESC 244). The session highlights the variety of interests of our students and includes the sports of softball, weightlifting, football, track and field, lacrosse, and wrestling. Presenters will provide background information, describe the methods used to examine the skill, and then share the results of their field-based research. The ESC 244 course provides students in the exercise science major and coaching minor with initial experiences in the research process. The presentations in this session showcase the students’ first venture into research projects in the discipline.

Student presentations include: softball base running techniques; one-arm kettle bell snatch exercise; one-arm football catches; intermediate hurdle clearance; lacrosse shooting technique; and ankle pick and high crotch wrestling takedowns.

Drew Anderson, Maria Antoni, Zachary Beers, Marcus Brockman, Alexi Castro, Mikayla Cheney, Winston Eubanks, Anthony Felitti, Nate Helwig, Kami Holt, Megan Klee, Kendall Mikkelsen, Ryan Narber, Malayna Rowe, Lauren Twomey, Kadie Weaver, Morgan Willet

Faculty Sponsor(s): Ben Meyer

GLOBAL LANGUAGES AND CULTURES

TIME: 5:00–6:00  LOCATION: 121

Enjeux identitaires et politiques dans la littérature haïtienne/Politics and Identity in Haitian Literature

La table ronde proposée a pour objet d’évoquer les enjeux identitaires et politiques de la littérature haïtienne tels qu’ils apparaissent dans certains textes d’Evelyne Trouillot, Edwidge Danticat, Marie Vieux-Chauvet, Georges Sylvain et René Depestre. Nous nous intéresserons notamment à la représentation de questions liées à la langue, à l’enfance et à la maternité, à la censure, à la corruption et à la conscience esclave.

This roundtable proposes to address issues of identity and politics in Haitian literature, with a selection of texts by Haitian authors Evelyne Trouillot, Edwidge Danticat, Marie Vieux-Chauvet, Georges Sylvain, and René Depestre. More specifically, presenters will discuss the representation of language, childhood/motherhood, censorship, corruption, and the slave consciousness. Discussion will be in French.

Marleigh Chaney, Nicole Hallahan, Emilyn Labonte, Pierre Mede, Taren Swartz

Faculty Sponsor(s): Blandine Mitaut

TIME: 3:30–4:30  LOCATION: 121

The Holocaust and its German Legacy

This session will offer three student presentations on their research undertaken for the spring 2019 course GER393: The Holocaust and its German Legacy. Tristan Ambrose will offer his findings on how the filmic portrayal of Jews in German cinema changed from 1933 to 1950. Nikole Botscheller will present her findings on what Germans knew about the Holocaust while it was occurring. Finally, Shawn Wolfe will discuss the German precedents of anti-Semitism to Nazi racial ideology and why Nazism was successful in Germany. All three presentations will be in German.

Tristan Ambrose, Nikole Botscheller, Shawn Wolfe

Faculty Sponsor(s): David Wildermuth

HISTORY/PHILOSOPHY

TIME: 6:30–7:45  LOCATION: 121

New Directions in Social, Medical, and Political History

This session will feature cutting-edge scholarship in the fields of American social, medical, and political history. Nastassia Foose’s “Down with Germs: The Rise of Sterile Surgery in America” will analyze the origins and long-term significance of the development of aseptic surgery in the United States. Courtney Smith’s “Insights from the John McCune Collection: The Founding of Shippensburg University,” will examine the larger political, cultural, and social developments that shaped the early history of the institution. And Christine Musser’s “Vance McCormick: From Harrisburg’s Youngest Mayor to Negotiating the Treaty of Versailles” will trace the unlikely rise of a local politician to the world’s stage and examine his role in helping shape a new world order.

Nastassia Foose, Christine Musser, Courtney Smith

Faculty Sponsor(s): David Godshalk

TIME: 5:45–7:00  LOCATION: 232

The Architectural History of Ancient Egypt and Greece: the Great Pyramids of Giza and the Parthenon

Students from Dr. Gretchen Pierce’s HIS 105 class researched the history of the Great Pyramids from Ancient Egypt and the Parthenon from Classical Greece. Their research connected the physical objects to other historical topics like politics, religion, social structure, gender, and geography. They also built models of the object they researched. In this panel, seven history majors present their research and their artistic skills.

Amber Boyd, Sophia Damore, Max Edwards, Seth Edwards, Emily Fitzgerald, Sarah Hoffedtiz, Matt Justinus, Justin Noel

Faculty Sponsor(s): Gretchen Pierce
**HUMAN COMMUNICATION STUDIES**

**TIME: 3:30–4:30  LOCATION: 226**

**Exploring Interpersonal Attractiveness in Relationships: Investigations into Student Learning and Relational Uncertainty**

The panel features two research studies. The first study explores classroom anxiety and instructor attractiveness as predictors of student-based affective learning. The second study explores relational uncertainty as a predictor of argumentativeness and interpersonal attractiveness in the context of romantic relationships.

**Khaliq Coleman, Alyssa Garner, Sam Marshall, Andrea Matovich, Megan Mehaffey, Joe Pfender, Madison Schafer, McKensi Washabaugh**

**Faculty Sponsor(s): Matthew Ramsey**

**TIME: 6:30–7:30  LOCATION: 103**

**Grounded Theory Service Learning**

This roundtable discussion includes reflection and analysis from members of HCS333: Communicating Identity. Student will discuss the process of analyzing theories of identity and communication, engaging in community-based problem analysis guided by theoretical axioms, and the design and execution of service learning projects built to bridge theory and practice.

**Alvina Belcher, Zachary Carey, Cheyenne Creciun, Lindsay Embly, Rachel Ferrance, Samantha Fidler, Alyssa Garner, Kayla Granite, Nathaniel Houser, Johnny Hronis, Kirsten Kelly, Nicolas Kemmerer, Clayton Leab, Andrea Matovich, Shannon McLaughlin, Megan Mehaffey, Carly Schlesinger, Emma Starr, Gianna Uzzo, Brenna Wisler**

**Faculty Sponsor(s): Kara Laskowski**

**TIME: 4:30–5:30  LOCATION: 226**

**Understanding Sexuality and Racism: Investigations into Humor, Deception, and Sexual Orientation**

The panel features two research studies. The first study explores perceived communicative differences regarding sexual orientation and deception in the workplace. The second study examines communicative functions of humor as predictors of racism and loneliness.

**Victoria Campbell, Alec Corbin, Kayla Granite, Shakera Jenkins, Jolene Johnston, Tyler Rock, Isaiah Smith, Ramsey Snider, Taryn Wilson**

**Faculty Sponsor(s): Matthew Ramsey**

**MANAGEMENT, MARKETING AND ENTREPRENEURSHIP**

**TIME: 4:15–5:15  LOCATION: 103**

**Online Portfolios to Build a Personal Brand**

The panelists in this session will discuss their professional online portfolios. Each student has created a website and will show how they have created their own personal brand.

Products and companies have brands that represent collections of certain attributes. While branding on a business level is common; branding on a personal level is becoming more and more apparent as individuals brand themselves. Without even knowing it, individuals are creating a personal brand.

Students created a professional online portfolio to help brand themselves. A portfolio is an excellent way to for potential employers to receive information about an individual beyond what is on a resume, which may give an edge over the competition. Additionally, it is wise to maintain an updated portfolio throughout one's career to continue to document achievements, evaluations, and milestones.

**Matthew Cheng, Rebecca Lennon, Cynthia Martin, Bria Stevenson**

**Faculty Sponsor(s): Irma Hunt**

**TIME: 5:15–6:15  LOCATION: 103**

**The Intern Experience and the Learning of Business**

The panelists in this session are interns advised by Management, Marketing, and Entrepreneurship Department faculty. They are undertaking internships this semester at a variety of regional business or other organizations. They will discuss how their respective internship experiences have impacted their view of the world of work and business, as well as how it has positioned them for the next step in the development of their careers. Following Kolb's (1984) model of the Experiential Learning Cycle, panelists will describe and reflect on their experiences, draw conclusions about their larger meaning, and ponder the effect of their internship experience on the trajectory of their future business lives. Panelists will compare the scope, intensity, and value of their internship-based experiential learning with learning in the classroom environment.

**Chase Fisher, Valerie Hertz, Gianna Leffew, Andrew Newton, Morgan Reich**

**Faculty Sponsor(s): William Oberman, Ronald Taylor**
Building Bridges
Building Bridges focuses on small group discussion and interaction as a means to openly and frankly discuss issues of diversity. Faculty members have the opportunity to schedule facilitators to come into their classes to educate and enlighten students about diversity, stereotyping, racism, and white privilege. The program is designed to develop safe forums for students to discuss topics that might be sensitive or challenging. Student facilitators are selected to be part of the Building Bridges based on experience, availability, expressing willingness to learn, and cultural orientation. They go through a mandatory training process to become facilitators and are trained to discuss sensitive multicultural issues. During fall 2018, Building Bridges collaborated with the First-Year Experience Program by leading diversity discussions for first-year incoming students. Faculty members scheduled facilitators to come into their classes to educate and enlighten students about diversity, stereotyping, racism, and white privilege. The atmosphere was unique because few people are willing subjects outside of a safe space. In this Minds@Work session, Building Bridges facilitators will share research findings on program effectiveness, conduct a classroom simulation, as well as provide insight into their experiences.

Kanza Amin, Brenda Aristy, Tiffani Belton, Cheick Diaoune, Eleanor Hargrove, Jiciana Knight, Leah Mottershead, Rhys Seggel, Desiree Sourbeer, Steven Stewart

Faculty Sponsor(s): Diane Jefferson
Advisor(s): Kapri Brown

American Politics Panel
Students enrolled in the Political Science Department’s Senior Seminar and Independent Research courses will present papers focusing on American politics.

Wyatt Hammond, Marcus Huertas, Hayden Shreffler, Alexis Wolfe

Faculty Sponsor(s): Sara Grove

Applied Diplomacy: Representing Western Hemispheric Interests at the Washington Model Organization of American States
The Washington Model Organization of American States (WMOAS) presents a unique opportunity for students to learn about Western Hemispheric issues and politics. The simulation mirrors the work of the Organization of American States in promoting peace, prosperity, stability, and democracy. Students enrolled in PLS348 Applied Diplomacy rigorously study the issues and concerns associated with the OAS in preparation to represent a member country. Students will share their research and what they have learned from participating in the model.


Faculty Sponsor(s): Sara Grove

International Relations Panel
Students enrolled in the Political Science Department’s Senior Seminar and Independent Research courses will present papers focusing on international politics.

Ethan Diefenbach, Takumi Kimura, Nathan Roefaro, Wesley Trimble

Faculty Sponsor(s): Sara Grove
Wood Honors College Symposium

HONORS SEMINAR ROOM, HARLEY HALL

The Honors Symposium is the formal forum where Wood Honors College seniors present their capstone projects. The research, creative, and service-learning projects that our students present today represent the culmination of their academic experience in the Honors College. Thank you for joining us to learn about their projects and acknowledge their hard work!

ACCOUNTING AND MANAGEMENT INFORMATION SYSTEMS

TIME: WEDNESDAY, 4:45–6:00 LOCATION: HARLEY HALL 005

Creating an Honors Alumni Mentor Program

Alumni relations is a critical component in any high performing college; by connecting with graduates a mutually beneficial relationship is built between the past and the present. Students are also poised to realize the benefit of these relationships. With the creation of an alumni mentor program, students are able to build a valuable relationship with alumni who share educational background and have made their mark on the world. Alumni mentors can be a valuable asset that will enable students to thrive in their studies and future careers. This project was born with the intention of developing an alumni mentor program for students of the Wood Honors College. Over the course of a semester, a pilot program was created and tested with a group of honors accounting majors. This presentation will discuss outcomes of the pilot program and how the Honors College can maintain a self-sustaining alumni mentor program in future years.

Jordan Back

Faculty Sponsor(s): William Bealing

BIOLOGY

TIME: WEDNESDAY, 3:30–4:30 LOCATION: HARLEY HALL 005

Analysis of Gene Expression to Understand the Connection between Autophagy and Exosome Release in Glioma Cells

Autophagy is a highly regulated process for recycling cellular components. Recent research has focused on the role of autophagic abnormalities in cancer and neurodegenerative diseases such as Alzheimer's disease, Huntington's disease, and Parkinson's disease. The release of cellular components into the extracellular environment through exosomes, which are vesicles that carry waste between cells as a form of communication, is another mechanism that allows the cell to dispose of unwanted material. Our project addresses the relationship between autophagy and exosome function in two glioma (brain cancer) cell lines. The data collected from comparison of autophagy levels and exosomal release can be used to better understand the contributions of autophagy and exosomes to neurodegenerative diseases.

Megan Allison, Caroline Brough

Faculty Sponsor(s): Sherri Bergsten

Characterization of Rickettsia-Positive Molecular Isolates Identified in Pennsylvania Ticks Using Multilocus Sequence Typing and DNA Sequencing

According to the Centers for Disease Control, Pennsylvania has the greatest incidence of tick-borne disease in the United States. This project was the conclusion of a multi-year study that was conducted by rickettsiologists from Shippensburg University and the United States Naval Medical Research Center. Positive Rickettsia genus tick samples were subjected to molecular testing to determine speciation that included detecting and sequencing rickettsial housekeeping genes: 16S rRNA, Rick17, ompA, ompB, gltA, and sca4. The objective of the project was to genetically characterize rickettsial species found in Pennsylvania ticks. Complete characterization of rickettsial species found in Pennsylvania tick populations is important for public health because rickettsial pathogens fluctuate from being non-pathogenic to having the capability to cause severe, chronic disease. Research regarding what rickettsial species are present in Pennsylvania ticks will aid physicians in diagnosing and treating tick-borne disease.

Jennifer Farner

Faculty Sponsor(s): Alison Fedrow, Marcie Lehman
Molecular Detection of Rickettsial Pathogens in Ticks Removed from Wildlife in Pennsylvania

The study investigated the prevalence of *Rickettsia felis*, *Rickettsia asembonensis*, and other *Rickettsia felis*-like organisms (RFLO) in ticks collected in Pennsylvania. These rickettsial pathogens are bacteria known to cause disease in humans. Due to the difficulty of accurately diagnosing rickettsial infections because of their flu-like presentation, prevention is key. Recently, the number of these cases have been on the rise. While it’s known that fleas are vectors of these pathogens, research has yet to explore ticks as a vector. The northeast represents a large natural habitat for wildlife that carries ticks, yet no related research has been conducted in this region. As such, research was conducted to examine the presence of these bacteria in ticks that are carried by commonly encountered animals in Pennsylvania to assess the potential for disease transmission to humans.

Brianna Kling

Faculty Sponsor(s): Alison Fedrow

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Monte Carlo Simulation of Heavy Metal Ions in Aqueous Solution Using Lennard-Jones 12-6 Potential

This project utilizes Monte Carlo integration methodology to model the interaction of heavy metal ions in solution with water molecules. Previous research has investigated heavy metal ions in aqueous systems, but those studies have used the molecular dynamics simulation method. As a technique, Monte Carlo integration is more readily available to computational chemists than molecular dynamics. Utilizing the computer coding language of Fortran, as well as a coding script written for atomic structure, the goal of this experiment is to prove that Monte Carlo integration is an equally efficient method of simulation for this specific chemical system of molecules.

Nicholas Bigham

Faculty Sponsor(s): Jeb Kegerreis

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Testing Genetic Variability and Exploring Pollination Ecology of State Endangered Iris, Iris verna

*Iris verna* is an endangered angiosperm native to Pennsylvania. While its range exceeds Pennsylvania’s boundaries, it faces extinction in Pennsylvania, Ohio, and Maryland. Currently, there is a lack of information on the basic pollination ecology and the amount of genetic diversity present in Pennsylvania populations of *I. verna*. Pollination ecology and genetic variation both play significant roles in the long-term health and survival of a plant species. Therefore, both knowledge gaps must be addressed in populations of *I. verna* to understand, and combat, factors that are encouraging their extinction. This research was conducted to bring to light new information that will aid in the establishment of responsible management plans for the conservation of the endangered *I. verna* in Pennsylvania.

Olivia Turner

Faculty Sponsor(s): Heather Sahli, William Patrie, Emily Kramer

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Creating Promotional Videos for the Wood Honors College

Video is an innovation that is greatly impacting the rapidly changing field of journalism. Media’s adoption of the digital era requires knowledge and application of creating digital content for online platforms. Creating video stories is one form of media that is seen on outlets such as news websites and social media, and they are also used in the marketing field. To promote opportunities and share students’ stories, the Wood Honors College needs materials such as videos to allow prospective and current students to realize their full potential in the college at Shippensburg University.

Shannon Long

Faculty Sponsor(s): Michael Drager
Designing and Fabricating an FPGA Expansion Board

An FPGA or a field programmable gate array is a device that can be reprogrammed using HDLs (hardware description languages) like Verilog and VHDL. FPGAs have been used in wide array of applications that usually require higher speeds than a microcontroller can handle. To easily interface to FPGAs, development boards have been made for students and engineers. These boards include interfaces to simple switches, buttons and LEDs. They also include ports to interface to USB, HDMI, and Ethernet. Shippensburg University utilize the Zedboard development board, which includes all of these interfaces. The Zedboard also has a connector called the FMC, which is a standard connector that adds functionality to FPGA development boards. For this project, a board was designed and fabricated to interface to the FMC connector on the Zedboard to add the functionality of 16-bit color, 240 x 320 pixel display, a 5MP auto focus camera, and a resistive touch screen.

Derek Belsky

Faculty Sponsor(s): Thomas Briggs

Evaluating the Effectiveness of Residence Life Programming Models for Undergraduate Student Development

Fostering student development in and out of the classroom is at the forefront of the college experience. As the Higher Education and Student Affair (HESA) sector continues to advance, its departments must continually adapt to meet the needs of diverse student populations. This project examined the impact of several housing and residence life residential curriculum models on student development. Through theory, practice, and conceptual understanding my research focused on developing a hybrid residential curriculum program that would best meet the needs of continually changing campus communities.

Jeremiah Steigleman

Faculty Sponsor(s): Matthew Shupp

An Analysis of the Effectiveness of Safe Haven Laws in the United States

In the late 1990s, an uptick in reported instances of young, disadvantaged women abandoning and endangering their newborn infants led to the first attempts to pass legislation in the United States to protect these vulnerable children. These laws, known collectively as Safe Haven laws, were designed to deter infanticide and neonaticide by providing families with the option to safely and legally abandon their infants without facing the threat of criminal prosecution. Safe Haven laws have been enacted in all fifty states and the District of Columbia. It is necessary for these laws to be routinely evaluated to determine whether or not they are achieving their intended effect. Using data from the Centers for Disease Control and Prevention’s National Vital Statistics System and the Federal Bureau of Investigation’s Supplementary Homicide Report, my research compared the rates of infanticide and neonaticide before and after the passage of Safe Haven laws to evaluate the laws’ effect.

Rhiannon Leonard

Faculty Sponsor(s): Matthew Fetzer

An Economic Analysis of the Impact of Free Agency Trends on the NBA

During the past few decades, the National Basketball Association (NBA) has ranked worst in competitive balance among major North American sports leagues. As free agency rules have changed, it has become common for the best players in the league to play together, becoming what is referred to as a “super team.” The purpose of this project is to analyze the effect that this trend has had on the competitive balance of the league and compare it to previous levels of competitive balance. The research will quantify the effects that this trend has had on the popularity of the league. This can be represented through revenue, television ratings, and more. From these statistics, one will be able to see if the “super team” trend is having a positive, negative, or undetectable impact on the NBA.

Collin Browning

Faculty Sponsor(s): Andrew Vassallo
The Physical Body as the Source of Truth for Crossdressing Saints in Medieval Europe

Crossdressing was a surprisingly prevalent part of mainstream European culture during the Middle Ages. While few everyday Europeans crossdressed in their daily life without ridicule, it was an accepted part of their religious literary canon. While crossdressing saints were able to transcend the limitations of gender for spiritual or personal purposes, their contemporaries trusted the physical body to provide absolute truth and determine one’s gender.

Rachel Smith
Faculty Sponsor(s): Shari Horner

Getting a Head Start: A Short-Term Training Program to Increase Parent Employability

Head Start is a federally and state-funded program that provides a free preschool education for children of low-income families. While the main focus of the Head Start program is on early childhood development, Head Start parents also have significant needs. This project created a workforce training program for Shippensburg Head Start parents utilizing the ADDIE instructional design model. The perceived employment barriers and perceived employability of Shippensburg Head Start parents were first researched. Based upon the findings, a workforce training program was then designed, developed, and implemented to Head Start parents. The ultimate goal of the training program was to assist parents in overcoming their key perceived employment barriers and increase their perceived employability.

Arlee Simendinger
Faculty Sponsor(s): Vicki Taylor

Students’ Perceptions of the Marketing Practices of Pharmaceutical Companies

The pharmaceutical industry has great importance because it provides drugs that offer immense benefits. However, the industry’s importance has caused its marketing practices to come under increased supervision and scrutiny. The ways in which prescription drug companies market to individuals and physicians can lead to wrongful prescribing, which can have severe consequences. In addition, the pricing strategies of drugs is crucial as it can limit who has access to the drugs. Scrutiny based on these issues could cause tighter restrictions or at least public pressure on pharmaceutical companies to conduct their marketing practices in new ways. The research examined college students’ views of the pharmaceutical industry and its marketing practices. Determining which issues college students find the most concerning should offer indicators of what marketing practices the industry should reassess.

David Reagan
Faculty Sponsor(s): Wendy Becker

Implementing Telehealth in Pennsylvania Health Care Services

As technology becomes further integrated into our lives, medical professionals are increasingly examining how telehealth could be a resource for expanding treatment. There is great interest in Pennsylvania in determining how telehealth might allow for a more time- and cost-efficient method of providing care for people living in rural communities. Expanding communication access to patients would also permit medical professionals to more closely observe the progress of their patients without the patient needing to visit their office. However, there are a variety of barriers to the utilization of telehealth. This paper discusses the potential benefits of telehealth as well as the legislative, infrastructural, and security complications of expanding its usage in Pennsylvania. The paper concludes with recommendations regarding how the state should balance the benefits of telehealth services with the risks and complications that further implementation would develop as well.

Lucas Smith
Faculty Sponsor(s): Michael Greenberg
**The Impact of Gender and Sexual Orientation in Pennsylvania Politics**

Throughout the United States, women and minorities continue to be underrepresented in government and face discrimination. Following the 2016 presidential election, increasing numbers of women and members of the LGBTQ+ community ran for elected offices and became politically involved. This phenomenon is known as the “Trump Effect.” My research focuses on this effect and diversity in the Pennsylvania General Assembly compared to other state legislatures. It also examines the role of gender and sexual orientation in political campaigns.

Moriah Hathaway  
Faculty Sponsor(s): Sara Grove

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**Goldfish Tricks: Using Operant Conditioning Methods to Train Goldfish**

The Psychology Department’s Conditioning and Learning class focuses on operant conditioning. It currently utilizes a rat lab to teach rats the task of pushing a lever. While this is an effective teaching technique, rats require a significant level of daily maintenance. Goldfish require much less maintenance and are also much easier and less expensive to replace. This project researched the possibility of replacing the rat lab with a goldfish lab.

Patrick Hiller  
Faculty Sponsor(s): Kathryn Potoczak

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**Creating an Operant Laboratory Experiment: Fixed-Ratio Response in Goldfish**

This project sought to create an alternative to teaching basic operant conditioning techniques with rodents by developing a means to illustrate fixed-ratio (FR) schedules of reinforcement for an operant laboratory experiment for use with goldfish. It utilized four comet goldfish. After food wand training, subjects were trained to nose tap a specific-shaped (star, square, circle, or triangle) plastic stimulus for a food reinforcer. Once the nose tap was acquired, subjects were required to nose tap the training stimulus progressively more times to earn the food reinforcer, up to FR8. Data was recorded and presented graphically on sheets created specifically for use with this procedure. This experiment will teach future students about the operant conditioning concepts of shaping (teaching a new behavior using successive approximations, positive reinforcement, and extinction) and intermittent reinforcement (ratio schedules), foundational concepts in the field of behavior analysis.

Grace Ramacciotti  
Faculty Sponsor(s): Kathryn Potoczak

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**Heart Rate Variability and Level of Antisocial Behavior Symptoms in College Students**

This study examined the relationship between antisocial behavior symptoms (ABS) and emotion regulation in a sample of fourteen Shippensburg University students. The Subtypes of Antisocial Behavior (STAB) was used to measure antisocial behavior symptoms across three subtypes: physical aggression, social aggression, and rule breaking. Heart Rate Variability (HRV, measured by RMSSD and HF) was determined using a pulse transducer. RMSSD and HF were recorded under three-minute baseline, congruent Stroop, incongruent Stroop, and recovery conditions. The challenge condition consisted the Stroop Test. Before HRV measures were taken, subjects completed an online survey consisting of several questionnaires including the STAB. For purposes of analysis, two ABS groups were formed based on a median split of subjects’ scores on the STAB.

Brody Weibley  
Faculty Sponsor(s): Robert Hale
Increasing Participation in Power Teaching Math Groups: A Third-Grade Students’ Learning Project

As the world has become a more collaborative place, educational professionals increasingly need to encourage students to work with others so that they may be successful in their lives after their formal education has ended. Through power teaching, students are empowered to take the lead in learning new material, and when paired with other children, they assume guiding roles to ensure the whole group is on-task. However, the children's full participation is necessary to make power teaching math groups effective. My research project examined how to increase the participation of the third-grade students in my student teaching placement.

Kristin Naumann

Faculty Sponsor(s): Jennifer Pyles
Survey of intestinal helminths and ectoparasites of the Virginia opossum (Didelphis virginiana) from captured and road-killed animals

B.A. King, R.L. Cook, J.L. Stewart
Department of Biology
Shippensburg University, Shippensburg, Pennsylvania 17257

Abstract
The opossum is an omnivore that will eat, various plants, and
disks. The diversity of helminths, tissues is very high and is
parasites including various
sharks. Likewise, because
 وكان, and various species of
heptapods were collected from small intestine and
mites. The species collected were parasites
widespread in the study area.
Methods
Opossums were collected from small intestine and
mites. The species collected were parasites
widespread in the study area.
Results
The species collected were parasites
widespread in the study area.

References

Figure 1. A female Didelphis virginiana infected with helminths and parasites

Shippensburg University, Shippensburg, Pennsylvania 17257

Figure 2. A female Didelphis virginiana infected with helminths and parasites

Shippensburg University, Shippensburg, Pennsylvania 17257

Figure 3. A female Didelphis virginiana infected with helminths and parasites

Shippensburg University, Shippensburg, Pennsylvania 17257

Figure 4. A female Didelphis virginiana infected with helminths and parasites

Shippensburg University, Shippensburg, Pennsylvania 17257

Figure 5. A female Didelphis virginiana infected with helminths and parasites

Shippensburg University, Shippensburg, Pennsylvania 17257
ACADEMIC ENGAGEMENT AND EXPLORATORY STUDIES

TIME: 3:30–5:00  LOCATION: MPR BC

Trading Spaces: An Approach to a New Physical Writing Space

Using results from surveys and tutoring statistics, we will discuss changes in writers’ perceptions and attendance patterns before and after our move to a new location. This research will provide insight regarding the changes to our writing center space. Through these changes, we encourage writers to openly share their unique and diverse voices in a welcoming environment, allowing them to achieve their writing goals.

Deah Atherton, Michelle Coughlin, Brett Marquart, Alice Thompson

Faculty Sponsor(s): Karen Johnson

BIOLOGY

TIME: 3:30–5:00  LOCATION: MPR BC

Assessment of Optical Brighteners and Making Use of HPLC

Chemicals that are prevalent in wastewaters include optical brighteners (Fabric whiteners). These chemicals are common in laundry detergents (Kaschig 2003) but may pass through wastewater treatment in high quantities. I am assisting a graduate student, Tara, in exploring the concentrations of these chemicals in the water along with other fluorescent chemicals. Our focus has revolved around understanding the movement of these chemicals as well as figuring out how to operate our HPLC chemical instrument. Additionally, we plan to test the toxicity of concentrations of optical brighteners on macroinvertebrates that live in our local streams.

Tara Leeking, Adriana Townsend

Faculty Sponsor(s): Todd Hurd

TIME: 6:00–7:30  LOCATION: MPR BC

Drug Effects on Gene Expression, Cell Migration, and Survival

Autophagy is a process of self-degradation. In cancer cells autophagy can act as a tumor suppressor or a survival mechanism. Cell migration and cell-cell communication play a role in cell division and metastasis, which rely on microtubule dynamics. The regulation of microtubule dynamics in relation to other cellular processes like autophagy could assist in treatment of cancer. Experiments involved treating cells with colchicine to inhibit microtubule formation, in combination with drugs that up- or down-regulate autophagy. After treatment, cells were processed for cell counts, microscopy, cell migration assays and qPCR. Colcemid had a negative impact on cell survival and migration, while resveratrol, an autophagy inducer, protected cells from colcemid in addition to an increase in autophagosome formation. Correlations between survival, morphology changes, autophagy levels, gene expression and migration address whether combinations of drugs could offer new treatment options.

Kaitlyn Chenard, Jack Goertzen, Jessie Nagle, Mary Newman

Faculty Sponsor(s): Sherri Bergsten
Identifying a Beclin-1 Mutation
En Route to Discovery of New Autophagy Pathways

Autophagy is a cellular recycling process that promotes homeostasis, in response to stress. Autophagy therefore affects a cell’s ability to adapt and influences the decision between cell survival and cell death in a given environment. The Beclin-1 protein regulates autophagy and acts as a tumor suppressor. Beclin-1’s role in autophagy is during the beginning steps when the autophagic vesicles are created. Our research focuses on how manipulation of Beclin-1 impacts brain cancer cells. Three separate target sequences within the Beclin-1 gene were chosen for gene editing using the CRISPR system. The Beclin-1 gene is being sequenced after PCR amplification to further identify the exact mutation in each cell line. RNA isolation and qPCR analysis allow detection of altered gene expression pathways. Each mutant line is also exposed to drug susceptibility testing to see how survival is impacted by the specific mutation as well as the pathway being expressed.

Drew Barrett, Nora Ormsbee, Lane Yutzy
Faculty Sponsor(s): Sherri Bergsten

Measuring Autophagic Response to Varying Concentration Levels of Bacterial Infection of Glioma Cells Using Colocalization of GFP-p62 and DsRed-LC3

Autophagy is a conserved mechanism to eliminate intracellular material through self-consumption. Xenophagy is the focus of this research because this autophagic pathway relates closely to host immune systems, and has been shown to differ depending on the type of infection. The relationship between autophagy and intracellular microbes is significant because autophagy can control levels of infection. The cell line we are using is SNB19, derived from human glioblastoma which is an aggressive brain cancer. DsRed-LC3/GFP-p62 modified SNB19 cells, which allows visualization of autophagosomes, are inoculated with various concentrations of laboratory strains of E Coli and S aureus. Autophagic response in infected cells is measured using fluorescence microscopy and Image J analysis 24 hours post infection. Results of imaging studies can be confirmed using Western blotting for semi-quantitative analysis of protein levels that reflect LC3 processing that occurs with autophagy stimulation.

Christopher Atkins, Emma Dolan, Logan Redcay
Faculty Sponsor(s): Sherri Bergsten

An Investigation of Imine Hydrolysis

The hydrolysis of an imine derived from acetone was investigated in buffered aqueous media. Kinetics were monitored by UV spectroscopy and the resulting data was fit using MathCAD. Outcomes will be discussed with an emphasis on the development of a kinetics based laboratory for undergraduate students taking physical chemistry.

Caleb Ancharski
Faculty Sponsor(s): Daniel Predecki

Involvement of Outer Membrane Vesicles in the S(0) Metabolism in Chlorobaculum tepidum

Chlorobaculum tepidum, part of the family Chlorobiaceae, is an anaerobic, Gram-negative bacterium. It is both a phototroph and lithotroph, using anoxygenic photosynthesis while oxidizing sulfur compounds to fix CO2 into biomass, which provides energy for growth. It utilizes sulfide in its surroundings to produce extracellular S(0) that is oxidized to sulfate after sulfide is consumed. Growth on S(0) requires biogenic S(0), i.e. the S(0) has to be synthesized by Cha. tepidum for growth to occur. Proteomic analysis of biogenic S(0) indicates that it contains more than 100 proteins, many of which have been reported to be cargo of Outer Membrane Vesicles (OMVs). OMVs are shed by Gram-negative bacteria and are implicated in many processes. Not only are OMVs implicated in protein transfer, but toxins and signaling molecules can also be incorporated into membrane vesicles and then transported out of the cell. It will be tested if OMVs are involved in S(0) metabolism.

Caitlin Dull
Faculty Sponsor(s): Robin McCann
CHEMISTRY AND BIOCHEMISTRY

TIME: 6:00–7:30
LOCATION: MPR BC

Analysis and Quantitation of Synthetic Cannabinoids by Gas Chromatography/Mass Spectrometry

An experiment will be performed to analyze and quantitate synthetic cannabinoids samples using Gas Chromatography coupled to Mass Spectrometry (GC/MS). The project will specifically focus on two synthetic cannabinoids: AB-CHMINACA and AB-FUBINACA. GC/MS will be used to gain baseline spectral data on the synthetic cannabinoids by using deuterated compounds that will act as internal standards for quantitation. More specifically, this project will be performed using the Selective Ion Monitoring (SIM) mode of GC/MS. It will essentially increase the detection sensitivity and allow for the detection of very small concentrations of synthetic cannabinoid found in toxicology samples such as blood from DUI suspects. This is beneficial because cannabinoids are usually found in trace amounts.

Rebecca Akrong
Faculty Sponsor(s): Thomas Frielle

COMMUNICATION/JOURNALISM

TIME: 3:30–5:00
LOCATION: MPR BC

Agreement or Argument: How Facebook Commenters Interact with Marketing Messages

Facebook has over 1.5 billion daily active users, according to the company itself. People around the world use the social networking platform to converse and debate about virtually any topic thanks to the option to comment, but what motivates users to use that option? Through the use of a questionnaire to survey Facebook users, this study aims to determine whether users are more likely to comment on posts used for marketing purposes for the sake of agreement or for the sake of argument. In other words, are users more likely to comment because they concur with something related to digital content used for marketing purposes or because they wish to disagree in some way? The results of this study will help create a better understanding of the digital relationship between marketers and consumers.

Christopher Eckstine, David Oliver
Faculty Sponsor(s): Kyle Heim
Cultural Heritage and Community Pride at the Cumberland Valley Railroad Museum

The Cumberland Valley Railroad Museum (CVRM), built inside a 1956 railroad boxcar, narrates the story of Shippensburg's railroad history and functions as an event space. The boxcar features professionally-curated exhibits, with artifacts donated by the community. This applied research study examines the relationship between the communication of cultural heritage, specifically through museum exhibits including media displays, video, and social media, and the effect on community pride and identity. A survey will be administered via e-mail to visitors after touring the museum to measure their community pride and identity. The results of the survey may inform future programming at CVRM. If the results show an increase in community pride, the data serve as marketing research to further support requests for grant funding.

Lauren Hill, Megan Silverstrim

Faculty Sponsor(s): Kyle Heim

Murderers in the Media: Do Crime Dramas Desensitize Viewers?

Social media and TV shows about major murders can make it easy to forget that real people have lost their lives. Families who are grieving and having to relive the worst moments of their lives due to the publicity of the trials and crime sometimes are forgotten in the process. Shows on FX's American Crime Story tell the story of OJ Simpson's trial, as well as the murder of fashion designer Versace. Serial Killer Ted Bundy is the focus of a Netflix special as well as a new movie that recently came out starring Zac Efron. A large body of research has examined desensitization to media violence. This study will expand on that research by surveying Shippensburg University students to learn how much they believe they are desensitized by these murder dramas and to gain students' perspective on these crimes and their victims.

Morgan-Victoria Johnson, Audrie Noll

Faculty Sponsor(s): Kyle Heim

Effects of Instagram Marketing on Viewers' Purchasing Behavior of Technology Products

With the rising popularity of social media, it is not surprising that technology companies are using social media to reach potential customers. Companies are finding new ways to market their technology products on platforms like Instagram, including sponsored or boosted posts and advertisements. Because these marketing strategies are new, there is little research about how they affect consumer behavior. Through a survey of Instagram users, this study aims to discover the effect of Instagram marketing on consumer behavior: (1) Does viewing marketing of a technology product on Instagram increase the likelihood that the consumer will purchase the advertised product? (2) If the consumers intend to buy the advertised product after seeing it marketed on Instagram, are they more likely to purchase it online or in the physical store? The results of this study may help marketing professionals judge the benefit of marketing on Instagram.

Ishaq Azzouni, Katherine Thacher

Faculty Sponsor(s): Kyle Heim

Professional Sports and Politics: How College Students Perceive Athletes’ Use of Social Media as a Political Platform

A 2016 Gallup poll showed a spike in Americans closely following national politics. A potential factor that could cause the political popularity increase is professional athletes using their heightened social media platform as a political platform. Through this research, we will survey undergraduate and graduate students at Shippensburg University. This study will examine college students’ perspectives of their favorite all-stars, and how they perceive the political messages that these athletes display. The importance of this research will be to determine what students consider an appropriate balance between social media use for sports figures and politics. This study also carries importance to see if students allow these messages to affect their personal political views. In addition to these two variables, we will survey the students to find out if they are more likely to follow certain athletes based on their content.

Alyssa Riegel, Matthew Trust

Faculty Sponsor(s): Kyle Heim
Which Social Media Platforms Are Most Effective in Promoting College Athletics?

Social media has become a valuable tool for professionals in sports communication at every level. This study aims to discover how sports information directors at the collegiate level can best use social media to promote their university's athletics and which platform is most effective to reach followers. A survey will be administered to students at Shippensburg University, as well as fans of Shippensburg athletics, to determine what types of content they prefer to see from university athletic accounts. Data will also be gathered from current Shippensburg athletics' social networks to determine which types of posts generate the highest levels of engagement. Results of this study will help collegiate sports information directors develop a better understanding of how to interact with and engage followers on social media.

Casey Saussaman, William Whisler

**Faculty Sponsor(s):** Kyle Heim

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**COMPUTER SCIENCE**

**TIME:** 6:00–7:30  
**LOCATION:** MPR BC

**Jumpin Jeb: A Video Game**

Using the LibGDX framework for Java created a game throughout the course of Video Game Programming. Developed a 2D platform jumper game, that allowed users to climb up and scored off of how high they went. The game would auto scroll upward so the user had to keep moving. Along the journey up, the user could also collect various power ups that could alter the game state or player themselves. Jeb was the character you could play as, and had different animations that dealt with running and jumping. Once Jeb, the player, had fallen below the screen the game would end and add the user to the high score list to be displayed. After the prompt the user would then go to a new screen that would display the top 10 scores. And then would take them back to the main menu to play again. Inspiration for the game came from Doodle Jump, a mobile app.

**Austin Smale**

**Faculty Sponsor(s):** Charles Girard

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**COMPUTER ENGINEERING**

**TIME:** 6:00–7:30  
**LOCATION:** MPR BC

**Design Cycle for an Extension Module that Interfaces to Common Peripherals**

In order to easily interface computing devices to various peripherals like simple switches, buttons and LEDs, development circuit boards have been made for students and engineers. One of these development boards, the Zedboard, interfaces various devices to an FPGA, a device that can be programmed to reconfigure its internal hardware in order to run algorithms at the hardware level. Extending the availability of these peripherals helps give students access to a much larger range of potential projects in the future. An extension board that interfaces to the Zedboard through a high speed connector will be designed and fabricated. High speed circuits lead to many design challenges that make it difficult to transmit and receive data reliably and add considerable time to the circuit board development cycle. The functionality of the Zedboard will be extended to include common peripherals such as a colored display and a touch screen as well as a high speed camera peripheral.

**Derek Belsky, Adam Yosua**

**Faculty Sponsor(s):** Thomas Briggs

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**Light: A Video Game**

An orb of light traverses a dark dungeon to regather its lost shards, following trails of white crystals in this quick, fast-paced platformer. But the player needs to be wary. As they jump from platform to platform, absorb red gems to fly, and move quickly to gather shards, a timer for their score is steadily ticking down every second. Each shard collected increases this timer, and if it reaches zero, game over. The game incentivizes a quick wit, precise skill, and a sense for level awareness to gather all the lost shards as quickly as the player can muster. The end score directly correlates to how long it took to gather them all, making it competitive. This was the game I developed in Video Game Programming, built from LibGDX and coded in Eclipse/Java. It was a learning experience, and certainly not one without unknown problems to solve.

**Jacob Kole**

**Faculty Sponsor(s):** Charles Girard

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See map of poster locations on insert.
CRIMINAL JUSTICE

TIME: 6:00–7:30  LOCATION: MPR BC

An Analysis of the Effectiveness of Safe Haven Laws in the United States

In the late 1990s, an uptick in reported instances of young, disadvantaged women killing and abandoning their newborn children after having them in secret lead to the United States’ first attempt at Safe Haven legislation. Since then, Safe Haven laws (child abandonment laws) have been enacted in all fifty states, as well as the District of Columbia, in order to specifically deter instances of infanticide and neonaticide. By comparing rates of infanticide and neonaticide prior to and post establishment of these laws, this research project will demonstrate the level of the legislation’s effectiveness.

Rhiannon Leonard
Faculty Sponsor(s): Matthew Fetzer

ENGINEERING

TIME: 6:00–7:30  LOCATION: MPR BC

TRPG Management System

Using C# and SQL, we have created a tabletop role playing game management system for characters and how those characters react with parts of their environment. While this system works for Dungeons and Dragons 5th edition, it is in no way affiliated with Wizards of the Coast or Hasbro, and follows the guidelines of Wizards of the Coast’s Open Gaming License and the 5th System Reference Document.

Tehni Lowe, Courtney Rush
Faculty Sponsor(s): Carol Wellington

ENGLISH

TIME: 6:00–7:30  LOCATION: MPR BC

Adaptations to Reinvent SSR Time

Sustained Silent Reading time is a large component of many middle and high school English classes. Students are expected to silently read books of their own choosing for a consistent amount of time during a designated class period. However, as school districts push toward increasing student performance on standardized tests, these SSR programs are the first to be cut and replaced with PSSA or Keystone prep courses because the benefits of existing SSR programs are not clearly evident.

Adaptations must be made to SSR programs to increase the benefits that students receive. Using teacher modeling of the expectations of the program, including book talks between individual students and the teacher to increase linguistic fluency skills, and establishing groups for students to discuss their texts with others who are reading something similar will greatly improve the results of SSR. Students will receive social, communication, and stronger independent reading skills through these adaptations.

Emily Fogelsanger
Faculty Sponsor(s): Thomas Crochunis
Danger: Misinformation about Vaccine Safety

Vaccine-preventable diseases are responsible for so many deaths and yet vaccine rates are decreasing. Americans have been told a lie about vaccines and now struggle to believe the truth. Decades ago Andrew Wakefield, who had been a well-respected doctor, suggested without facts that vaccines were the cause of autism; since then the statement has been retracted and his medical license revoked, but many Americans have jumped onto the anti-vaccine bandwagon. Peter Hotez MD, PhD, vaccine scientist and parent of an autistic child, has written a book regarding vaccination and the dangers of misinformation and not vaccinating. Choosing to not vaccinate children puts them and those who cannot be vaccinated in danger of vaccine-preventable diseases. Currently the Ship community and our country are in an epidemic due to decreasing vaccination rates. Because of misinformation, it is crucial that we understand the truth about vaccines and the dangers for everyone when we chose not to vaccinate.

Ellie Piper
Faculty Sponsor(s): Sharon Harrow

Fan Translations and Cultural Bias

Animated media from Japan—more well-known as anime—has taken the United States by storm. This has created the chance to create large-scale cultural exchange, but instead, the initial English versions removed so much of the original Japanese references and culture that many viewers were unaware that the media they were consuming was Japanese to begin with. Once fans realized the extent to which their favorite form of media was altered from its original form, many decided to translate these shows themselves.

In my project, I will examine how this phenomenon of fan translation reveals not only the professional bias that fed into removing Japanese cultural references from anime, but also how fans have engaged with Japanese culture by taking an active part in consuming and distributing Japanese media to American fans. In doing so, I hope to open a discussion on erasure of culture by professional translations, and on whether fan translations are adequately remediating the problem.

Ash Chapman
Faculty Sponsor(s): Rich Zumkhawala-Cook

Globalization and Beauty Standards

In today's world, popular culture is now more accessible than ever on a global scale. Cultural industries—including the beauty industry—now have previously unforeseen effects on local and global communities. My research will focus on the effects of beauty standards on women around the world. Part of my focus will be on the recent popularity of Korean skincare and K-Beauty in the United States, as I think this is an excellent example of globalization. I will also research online beauty communities and examine the culture that exists now that citizens from all around the world can take part in the conversation. In my own experience, I have noticed a lot of colorism and emphasis on lightening skin in online beauty discourse. This is a phenomenon I hope to examine further through my research.

Courtney Caro
Faculty Sponsor(s): Rich Zumkhawala-Cook

Ideology of Disability in Supervillains

For this research, I will be examining the ideologies behind disability in regards to supervillains and how the ideals of the individual self are depicted when constructing supervillains. This research will be questioning the use of disability when forming a character that is meant to be not liked, as well as looking closer at the use of physical and mental disabilities when constructing supervillains to perceive them as degenerate, deviant, and evil. With this research I will be discussing disability tropes such as the “supercrip” and the “evil cripple” to see the juxtaposition of them in popular culture.

For this research I will call upon scholars like Douglas C. Bayton and his article, “Disability and the Justification of Inequality in America,” to further advance my research and dig deeper into the stereotypes that spread into popular culture that would immensely ostracize a community by using ones identity to stereotype them as "evil."

Ali Laughman
Faculty Sponsor(s): Rich Zumkhawala-Cook
Improving Student Summarizing
Summary and synthesizing is something that teachers often assume that their students know how to do when they enter their classroom. I propose that with targeted summarizing assignments that are completed while reading a text, students will have a better grasp of the entirety of the text. This will assist them in completing a writing assignment synthesizing what they have read in the text. This skill will allow them to synthesize and summarize things that they are reading in other classes as well.

Kristina Rhoades
Faculty Sponsor(s): Thomas Crochunis

Memory and Literature: Final Project Topic TBD
In this poster presentation, I will share the results of my work on a project for the Honors Introduction to Literature course I’m taking this spring. Project under development at the time the program went to press.

Caitlin Bagnick
Faculty Sponsor(s): Thomas Crochunis

Memory and Literature: Final Project Topic TBD
I will be giving a poster presentation. In this presentation I will be sharing information and results from my final project in Honors Intro to Literature which I am taking this Spring. Project under development at the time the program went to press.

Nicole Calandrelle
Faculty Sponsor(s): Thomas Crochunis

Memory and Literature: Final Project Topic TBD
In my poster presentation, I will share the results of my work on a semester-end project for the Honors Introduction to Literature course that I am currently taking this spring. Project under development at the time the program went to press.

Morgan Landman
Faculty Sponsor(s): Thomas Crochunis
Memory and Literature: Final Topic of Project TBD
In this poster presentation, I will share the results of my work on a project for the Honors Introduction to Literature course I’m taking this spring. Project under development at the time the program went to press.

Molly Lively
Faculty Sponsor(s): Thomas Crochunis

TIME: 6:00–7:30 LOCATION: MPR BC

Memory and Literature: Final Project Topic TBD
I will be researching the effects of different vocabulary teaching strategies on 9th grade students, evaluating their development with the content. Project under development at the time the program went to press.

Tara Peck
Faculty Sponsor(s): Thomas Crochunis

TIME: 6:00–7:30 LOCATION: MPR BC

Memory and Literature: Final Project Topic TBD
In this poster presentation, I will share the results of my work on a project for the Honors Introduction to Literature course I’m taking this spring. Project under development at the time the program went to press.

Ellie Piper
Faculty Sponsor(s): Thomas Crochunis

TIME: 3:30–5:00 LOCATION: MPR BC

Memory and Literature: Final Project Topic TBD
In this poster presentation, I will share the results of my work on a project for the Honors Introduction to Literature course I’m taking this spring. Project under development at the time the program went to press.

Jacob Pollock
Faculty Sponsor(s): Thomas Crochunis

TIME: 3:30–5:00 LOCATION: MPR BC

Memory and Literature: Final Project Topic TBD
In my poster presentation, I will share the results of my work on a semester-end project for the Honors Introduction to Literature course that I am currently taking this spring. Project under development at the time the program went to press.

Carl Potter
Faculty Sponsor(s): Thomas Crochunis

TIME: 6:00–7:30 LOCATION: MPR BC

Memory and Literature: Final Project Topic TBD
In my poster presentation, I will share the results of my work on a semester-end project for the Honors Introduction to Literature course that I am currently taking this spring. Project under development at the time the program went to press.

Maddie Reuther
Faculty Sponsor(s): Thomas Crochunis

TIME: 3:30–5:00 LOCATION: MPR BC

Memory and Literature: Final Project Topic TBD
In my poster presentation, I will share the results of my work on a semester-end project for the Honors Introduction to Literature course that I am currently taking this spring. Project under development at the time the program went to press.

Ashley Wagner
Faculty Sponsor(s): Thomas Crochunis

TIME: 6:00–7:30 LOCATION: MPR BC

Multitasking and it’s Effects on Comprehension
I will analyze the effects of multitasking and how this can relate to one’s comprehension of information.

Skylar Mohler
Faculty Sponsor(s): Thomas Crochunis

TIME: 3:30–5:00 LOCATION: MPR BC

Music and Memory
What is the connection between music and memory?

Matthew Zemba
Faculty Sponsor(s): Thomas Crochunis

TIME: 3:30–5:00 LOCATION: MPR BC

See map of poster locations on insert.
Research Pertaining to Group Environment’s Effects on Gifted Learners

My research will be findings based on field studies conducted at my student teaching placement. I will be observing how heterogeneous groups of gifted and non-gifted students work compared to how homogeneous groups of all-gifted students work. Based on research data I’ve studied before conducting my field study, my hypothesis is that the heterogeneous groups will perform better in areas such as reading comprehension and writing/composition.

Christopher Carragher
Faculty Sponsor(s): Thomas Crochunis

Vocabulary Acquisition in the English Classroom

Vocabulary is a common staple in English curriculum, but is it taught effectively in schools? This project explores the potential benefits of vocabulary and tests two different approaches to vocabulary acquisition—one passive and one active.

Rachel Smith
Faculty Sponsor(s): Thomas Crochunis

The Manga Phenomenon

For my Mind@Work proposal I explore the topic of Japanese manga and how it has incorporated and in some cases shaped our global culture. “Manga” is the word used to describe Japanese comic books and graphic novels as it has become a phenomenon within the past seven decades. Its origins dates back as far as the twelfth and thirteenth centuries depicting it as a specific art style that reads from right to left. The purpose of most manga is to tell a story that teaches a lesson to the readers all depending on the material that is written. A lot of themes that overlap within certain manga include lessons of failure, triumph, coping with trauma, maturity, enlightenment, and so forth. It has played a large role in shaping a worldwide culture, for the lessons certain manga teach is universal. They can be related to any aspect of life, and ultimately inspire readers to incorporate such values into their everyday lives.

Morgan Broomer
Faculty Sponsor(s): Laurie Cella

The Reflection of Memory in Literature

In my poster presentation, I will show what I learned throughout my Honors Introduction to Literature class that I am currently taking this spring. My presentation will revolve around how memory is shown and used in the context of literature.

Erica Franta
Faculty Sponsor(s): Thomas Crochunis

EXERCISE SCIENCE

Active and Passive Recovery Impact on Muscular Measures of Female Soccer Players

This research investigates the effects of passive and active recovery on different muscular measures to see if injury could be prevented. Ten Shippensburg University Women’s Soccer team players completed a battery of tests on two separate days for active and passive recovery. Each day consisted of measuring rate of perceived exertion (RPE), hamstring flexibility, and anaerobic power. The RPE after active recovery was significantly higher than during passive recovery (9.6±1.4 vs. 6.9±1.7 p<0.05). Hamstring flexibility after active recovery was 1.4 cm greater than after passive recovery (28.6±9.4), this difference was not statistically significant (p>.05). Active recovery resulted in a significant anaerobic power increase from 779.1 to 805.6. The increase in hamstring flexibility as well as anaerobic power seen with active recovery, during half time, could help to prevent injuries as well as increase athletic performance in the second half of game.

Samantha Bray
Faculty Sponsor(s): Joohee Sanders
Assessing the Correlation Between Functional Fitness and Living Arrangements in Older Adults

As people age, they typically lose the ability to perform basic functional tasks and activities of daily living (ADLs). Physical activity has shown to improve balance, stability, strength, and aerobic fitness in older individuals. This will in turn help with maintaining their functional abilities and contribute to independence in their later years. In addition, the early onset of physical activity during young adulthood has been positively correlated with long-term health and the prevention of falls in older adults. This research investigates and compares the effects of two different types of site locations on the functional ability of older adults. We also assessed the role of exercise program engagement during the ages of 18-24 on the functional retention rates in older adults who were active during that time period. We predicted that older adults who lived outside of a senior living facility and had engaged in an exercise program from the ages of 18-24 would retain function later in life than those that were in a senior living facility and/or those seniors who were not engaged in an exercise program during early adulthood.

Nathan Gardner
Faculty Sponsor(s): Russell Robinson

Cardiovascular Recovery in Two Different Recovery Positions

The purpose of this study was to investigate the effects of different recovery positions on heart rate recovery (HRR) and blood pressure recovery after a submaximal treadmill run. Thirteen male college students completed three sessions of testing, in a random order. The first session consisted of a VO2 max test used to determine running speed for the following three testing sessions. The following two testing sessions consisted of a ten-minute submaximal run at a predetermined speed equivalent to 70 percent of the individual's VO2 max. Following the submaximal run, the subjects were randomly assigned one of the two recovery positions (active recovery at 3.5 mph and supine with legs elevated).

Thomas McIntyre
Faculty Sponsor(s): Joohee Sanders

Comparison of Gait Patterns and Everyday Dual-Tasks in College Students

The purpose was to compare the impact of dual-tasks on selected gait parameters in a college-aged sample. Thirteen subjects completed three trials for each DT condition. The conditions were control, carrying groceries, texting, and cognitive thinking. Subjects were instructed to walk at their habitual walking pace for 15 m. Gait speeds were calculated. Texting GS decreased as compared to the CON. Similarly, GS decreased by the duration of the CT. SL decreased when the subjects completed the TEX and CT conditions as compared to CON. Cadence decreased during the TEX and CT conditions. No differences were found between the CON conditions and CG or TEX and CT on the selected gait variables. Overall, subjects walked slower, decreased their stride length and cadence when texting and computing math problems while walking. The selected gait variables were not negatively impacted by carrying groceries. The findings suggest college-aged students tend to focus more on certain tasks over the motor skill.

Kimberly Williams
Faculty Sponsor(s): Sally Paulson

Does Wrist Taping Improve in Bench Press Exercise

In the world of athletics, there are many products on the market to aid in resistance training and physical activity. To determine if different types of wrist taping impact repetition performance during a bench press exercise. Nine anaerobically trained college students were recruited for the study. Subjects were required to have at least two months experience with upper body resistance training, more specifically the bench press. All subjects performed all four different testing sessions randomly, first orientation to the bench press and the remaining testing sessions, subjects completed the bench press, until fatigue. Three conditions were used: control, basic wrist taping, and bilateral figure-eight wrist taping. The results of the repeated measures ANOVA found there were no significant differences in the number of bench press repetitions among the conditions. The results suggested wrist taping did not improve or hinder the number of repetitions performed during a bench press exercise.

Haley Miller
Faculty Sponsor(s): Sally Paulson
Effects of Environmental Temperature on Physiologic Measures and Reaction Time During Graded Leg Ergometry

Purpose: The study investigated whether thermal conditions might affect simple reaction time (SRT) and choice reaction time (CRT).

Methods: Ten college-aged subjects performed a test battery in a hot environment and room temperature environment. Subjects completed graded leg ergometry and performed a battery of tests three times on a testing day including a collection of multiple physiological variables.

Results: Tympanic temperature was significantly elevated (p < 0.05) in the warm environment. Heart rate was significantly higher in the hot environment at min 4 of exercise (133.2±2.8 vs. 124.9±2.5 bpm). Post-exercise lactate was significantly greater in the room temperature environment (7.77±0.7 vs. 6.0±0.6 mmol/L). Neither SRT nor CRT was affected by environmental conditions. Conclusion: Based on the results of this study, thermal condition was not found to significantly alter reaction time at rest or following acute exercise despite effects on other physiologic variables.

Dylan Beaver
Faculty Sponsor(s): William Braun

Effects of Varied Rest Intervals on Vertical Countermovement Jump Performance and Fatigue Index

The purpose of this study was to investigate the effects of varied rest intervals on vertical jump performance, power/velocity, fatigue, and rate of perceived exertion (RPE). Sixteen subjects came in on three separate occasions and completed three sets of ten vertical jumps. On each occasion, a different RI (thirty, sixty or ninety seconds) was administered. Jump height, average and peak power/velocity, fatigue index, and RPE were measured and/or calculated for each set and condition. Sixty second RI showed the most improvement in average jump height from the previous set when compared to 30-s or 90-s RI. However, these improvements were not statistically significant. 60-s RI showed the least amount of fatigue, but there was no statistical difference between 30, 60 and 90-s conditions. Based on the results, varied RIs did not significantly alter vertical jump performance or fatigue but a modest improvement on performance was shown during 60-s condition, which may impact an athlete's performance.

Cory Woolf
Faculty Sponsor(s): Joohee Sanders

Impact of Active and Passive Recovery on Female Soccer Players’ Metabolic Measures in Second Half of Short Sided Game Play

The purpose of this study was to investigate the effects of active vs passive recovery on performance.

Mariah Varner
Faculty Sponsor(s): Joohee Sanders

Influence of Acute Resistance Exercise on Glycemic Control

During this research project, we looked at the effects of glucose uptake prior to resistance training and how insulin levels were effected. It was hypothesized that resistance training would cause a larger uptake of glucose, resulting in an increase in insulin sensitivity. Seventeen subjects with a minimum of three months of resistance training were put under a resistance training protocol. Results proved that there was not a significant increase in glucose regulation and that further research needs to be conducted.

Zachary Rollar
Faculty Sponsor(s): William Braun

Responses to Caffeine Supplementation in Trained and Untrained Individuals During the Wingate Protocol

Caffeine is an ergogenic aid that can enhance performance in both aerobic and anaerobic exercise. The purpose of this study was to determine if trained individuals elicit a greater response to caffeine consumption in the Wingate Anaerobic Power Test (WAPT) when compared to untrained individuals. Ten participants completed a WAPT on three separate testing days, each day under a different condition (baseline, caffeine, or placebo). Peak and mean power outputs were measured before and after the WAPT. No significant differences were found between baseline (861 ± 213 W), caffeine (898 ± 172 W), or placebo (892 ± 223 W) conditions in peak power outputs (p < 0.05). Mean power output values were not significantly different between the baseline (541 ± 94 W), caffeine (545 ± 83 W), or placebo (547 ± 92 W) conditions (p < 0.05). Mean power output was larger in trained individuals than untrained individuals in all conditions (baseline, caffeine, and placebo).

Christa Sebeck
Faculty Sponsor(s): Ben Meyer
**FINANCE**

**Time:** 3:30–5:00  
**Location:** MPR BC

**Investment Management Program**

The Investment Management Program (IMP) at Shippensburg University is one of the most prestigious programs offered by the Grove College of Business. Selected students are provided opportunities to gain practical experience managing a real-dollar portfolio (the Wisman Fund) and investing in securities, as well as building teamwork skills. The IMP program seeks to achieve long-term capital appreciation to provide scholarships for incoming finance majors. As the current holdings and returns are presented, individuals can see the performance of the fund over the past several years. Presenters will also review an outlook of the fund’s future in addition to covering overall market trends and economic cycles that the class predicts.

**Cole Backenstose, Austin Horvath, Garrett Lee, Matt Troxell**

**Faculty Sponsor(s):** June Pham

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**GEOGRAPHY/EARTH SCIENCE**

**Time:** 6:00–7:30  
**Location:** MPR BC

**A Century Long Look at Land Use in Curaçao**

The aim of this project is to examine how land use has changed in the past century in Curaçao. Curaçao is a small Dutch island located in the ABC island chain. The goal of this research is to discover how historic land use (i.e. natural landscapes, agriculture, etc.) has influenced modern land use. Additionally, I will investigate urban sprawl and the degree to which plantations have converted to communities in five study areas (Savonet Plantation, Jan Thiel, Spanish Water/Santa Barbara Plantation, Jan Kok, and Piscadera Bay). Using a series of topographical maps produced between 1900-1910, coupled with recent aerial imagery and land use maps, it is possible to carry out this research. Change in land use has been shaping development in the United States for hundreds of years. Curaçao is no exception. Due to the island’s small size these phenomena are telescoped. Ongoing literature research and field examination will further support data collection and analysis.

**Caylyn Hall**

**Faculty Sponsor(s):** Sean Cornell

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**A Multidisciplinary Approach to Understanding the Evolution of Curaçao’s Mineral Commodities**

Since the Dutch occupation of Curaçao in 1634, the Caribbean island has seen substantial economic growth and decline resulting from the demand of different commodities. This economic instability is partially due to the lack of mineral commodities available. Countries similar to the US on average possess significant quantities of minerals, due to their diverse geologic terrains, which provide greater economic stability. Curaçao has possessed only two economically viable minerals that were able to be extracted: salt and phosphate. The former being a renewable resource while the latter is finite. This study aims to analyze the influence that these two commodities had on Curaçao from a multidisciplinary perspective. This will be achieved by compiling archival records and field observations regarding the local influence of geology, historical economic data, and social and topographic legacy issues that are intimately rooted within the history of these minerals.

**Jacob Percey**

**Faculty Sponsor(s):** Sean Cornell

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**Analysis of the Effects of Concentrated Animal Feeding Operation’s on the Bacterial Contamination of Private Wells in Upper Mifflin Township, Pennsylvania**

The bacterial contamination of private wells in the United States and Pennsylvania continues to be an issue that effects rural homeowners. Concentrated Animal Feeding Operations (CAFOs) have been identified as a source of bacterial contamination, but research into its link have been mostly inconclusive. The purpose of this study is to research how this contamination can occur, if CAFOs are a significant source, how the local geology affects the transport and fate of this contamination, and how regulations can better protect private well owners. This study uses water samples taken from multiple private wells in Upper Mifflin Township, Pennsylvania, to conduct a spatial and temporal analysis of bacterial contamination. From this, the most probable sources can be identified, and the data could be used to protect the local homeowners from contamination. Further research into the importance of protecting private wells for human health could provide a convincing argument for new regulations.

**Garrett Vandebrake**

**Faculty Sponsor(s):** Christopher Woltemade
Business Over Health: A Reevaluation of Isla Oil Refinery’s Impact on Air Quality

Curaçao’s Isla Oil Refinery, first built and operated by Royal Dutch Shell, has played an important role in the economics of the small island nation yet has had significant disadvantages. Unfortunately the age of the refinery, now operated by PDVSA (Venezuela’s Oil Co.), is negatively affecting the environment and the health of Curaçao’s population. In 2015, a qualitative method utilizing a five-point scale, was used to quantify air quality and its impact on eyes, throats, and nasal passages (Koons, 2015). Since 2015, several environmental movements, such as the Paris Climate Treaty and the Environmental Policy Plan Curaçao, have been enacted to push for change at the refinery. The air quality will be reevaluated using the five-point scale. If the new movement toward greener practices has been implemented, then a reduction of the pollution should be observed.

Margaret Dunkelberger
Faculty Sponsor(s): Sean Cornell

Comparison of Curaçao’s Microclimates and Normalized Difference Vegetation Index as Indicators of an Urban Heat Island Effect

This research intends to investigate the intensity of an Urban Heat Island (UHI) effect in Willemstad, Curaçao and how this microclimate system impacts the vegetation on the island. The significance of this research can provide insight on global climate change and urbanization; but also signifies the continued exploitation of Curaçao’s natural resources. Prior research (Bruning 2015) has identified correlation between the increased temperatures in Willemstad and increased precipitation downwind in “Banda Abou.” Interestingly, the vegetation in “Banda Abou” or the northwestern portion of the island is more dense than the land area upwind of Willemstad in “Banda Ariba.” To measure this phenomenon, a Normalized Difference Vegetation Index (NDVI)-precipitation correlation will be applied to determine whether the UHI’s effect on localized precipitation upwind has any statistical significance to the varying vegetation on the island.

Bryan Pearson
Faculty Sponsor(s): Sean Cornell

Examining Water Quality in Two Small Streams Draining Agricultural and Urban Lands Around Shippensburg, Pennsylvania

Certain dynamics within agricultural and urban watersheds can potentially impair the water quality of streams draining those watersheds. For example, nutrients from farmlands can trigger eutrophication in receiving streams and endanger aquatic organisms. Similarly, changing land use/cover associated with urban development can alter water temperatures and other physicochemical characteristics of streams. Periodic monitoring of streams for water quality is needed to protect the dependent ecosystems. This study utilized a multiparameter water quality probe for weekly in-situ measurements of stream water temperature, dissolved oxygen (DO), and conductivity for a period of five months. Additionally, weekly water samples were collected at the same in-situ locations for nitrate and phosphorus testing in the laboratory using the Hach DR2800 spectrophotometer. Results of the measurements and laboratory testing reveal areas of water quality concern on several stream reaches.

Benjamin Clemmer
Faculty Sponsor(s): Joseph Zume

Housing Diversity in Susquehanna Township

In this study I explored housing diversity in Susquehanna Township, Dauphin County, Pennsylvania. A suburb around Pennsylvania’s capital, Susquehanna Township has grown exponentially during the second half of the twentieth century. With few parcels left to develop, it’s important for the township to examine the extent of housing diversity.

Housing diversity has many meanings and can be measured by various methods. Often there is a focus on demographics, accessibility to housing or even the degree of homelessness. In this study I measured housing diversity by exclusively examining housing stock characteristics within residential parcels. These characteristics include, total square footage of the house, number of rooms, and the value of the property.

I employed ESRI ArcGIS to analyze the spatial dimensions of housing diversity; specifically, the study addresses the extent to which the township’s housing stock is diverse and the implications of that diversity.

Joshua Chast
Faculty Sponsor(s): Janet Smith
Prioritizing Sites for Riparian Buffers Placement in the Antietam Creek Watershed

This research is a GIS analysis of the Franklin County portion of the Antietam Creek watershed to determine suitable sites for riparian buffer placement. The parameters used to identify sites include topography, soil type, and specific land-use.

Timothy Wilson
Faculty Sponsor(s): Christopher Woltemade

The Legacy of Oil Refining in Curaçao—Helpful or Hurtful?

In the post-slave era, historians report a second phase of economic prosperity in Curaçao with the establishment of the Royal Dutch Shell Oil Company and the development of the Isla Oil Refinery in 1915. With Shell threatening to leave, labor disputes and mismeasurement of the refinery sparked the "trinta di mei" workers' revolt in 1969. This research argues the revolt was not only a product of labor disputes, but also a legacy of racial, social, and political oppression of blue-collar workers by the upper-class Dutch Curaçaoan. By reviewing and analyzing primary literature, archival imagery, and field observations, this research will determine the political and social consequences of the workers' revolt. Although the revolt leads to a black rise in political power, the Curaçaon population still deals with negative legacy effects of the Royal Dutch Shell Oil Company.

Kristin Thorpe
Faculty Sponsor(s): Sean Cornell

The Lionfish Invasion in Curaçao and its Socioeconomic Effect

Lionfish (Pterois volitans) are native to reef ecosystems of the tropical and sub-tropical Indo-Pacific. Lionfish were introduced to Florida waters in the 1980s, and have spread rapidly throughout the northwestern Atlantic, Caribbean Sea, and the Gulf of Mexico. Lionfish are invasive, carnivorous fish that reduce overall reef biodiversity. The purpose of this research is to assess the socioeconomic impacts of the lionfish on the Afro-Curaçaoan fishing population in Curaçao. I will use Reef.org’s fish counts as well as interviewing the local fishermen to collect data. Data will be analyzed by statistics on past and present fish counts and a qualitative assessment on the fishermen’s surveys will be conducted. I expect to see a negative effect on local fisheries due to the invasion of the lionfish.

Kelliann McWhorter
Faculty Sponsor(s): Sean Cornell

The Population Crab of Curaçao

Studying changes in population centers within a given landscape can reveal much about the economic, social, cultural, political, and even environmental conditions of a region. In Curaçao, population centers for major socio-economic groups have been strongly influenced by location in windward relation to the oil refinery, proximity to the city/infrastructure, and water supplies. This study focuses on the population distribution on Curaçao, as noted in the Census of 2011 for the period from 2001 to 2011. The study will also analyze the level of cohesion between socio-economic groups in Curaçao based on the 2018 social cohesion survey taken by the Curaçaoan Bureau of Statistics. Preliminary assessment of census maps shows movement away from the eastern coasts, most likely due to the harsh wind and sea spray. A decrease in population on the windward coasts and downwind industrial areas are expected along with a higher percentage of the populations in those areas being Afro-Curañaoan.

Paige Steffy
Faculty Sponsor(s): Sean Cornell

The Sephardic Influence in Curaçao

The Sephardic Jews have suffered through generations of cultural appropriation, however their original cultural values and traditions survived and found their way to the island of Curaçao. The very first Sephardic colony failed and moved on, but the second colony led by Isaac Da Costa, created the oldest Sephardic family lineages in Curaçao (MacMullen, Eugene C.), and they are all substantially impactful on the island up to this day. The research and data collected and presented will construct a timeline of Sephardic Judaic influence in Curaçao. Based off of academic resources, government resources, and field observations, this timeline will highlight the levels of Sephardic involvement in the slave trade, as well as how the Sephardim have effected Curaçao’s cultural society and economy. The influence that the Sephardic Jewish people have in the society and culture of the island of Curaçao runs deep into its history and is still exceedingly prevalent today.

Alexis Magee
Faculty Sponsor(s): Sean Cornell
Tree Ring Analysis of Barrier Island and Mainland Maritime Forests, Chincoteague Bay, Virginia

Tree communities on the East Coast of the USA have been subjected to stressors over the last few hundred years with human advancement and other climate factors affecting the health of their ecosystem. Two transects of Loblolly pines were sampled with increment bores on Wallops Island, Virginia, and were dyed using a phloroglucinol solution to illuminate the growth rings. Trees that show narrower annual growth rings are expected to have formed in drier, more stressed years. Thicker annual growth rings are expected to have formed in wetter years. If trees grow in a stressed state, they are prone to other dangers such as Pine Bark Beetles, which could lead to more rampant ghosting of maritime forest ecosystems. This research is based on prior research done by Olivia Allen and Dr. Sean Cornell in 2017 that exposed a correlation between tree growth and saltwater exposure. This study aims to link tree growth histories and correlate local weather data with the observed amount of yearly tree growth.

Robert Joyce
Faculty Sponsor(s): Sean Cornell

Lyso®: A Popular Contraceptive

I discovered that in the 1920s, Lysol® cleaning products were one of the most popular at-home birth control remedies among middle class women. Even more interesting is that Lysol® actually encouraged douching with their products as a means of maintaining “feminine hygiene,” a popular euphemism for over-the-counter contraceptives, according to Andrea Tone, an associate professor of history at the Georgia Institute of Technology. It was not until the 1972 case, Eisenstadt v Baird, that it became legal for everyone, even unmarried individuals, to have access to contraceptives. As the world shifted, and opportunities for women expanded, so too, did people’s goals around family planning. By evaluating how Lyso® became so popular, I hope to provide some insight into how information about contraceptives was presented to women before the social stigmas surrounding it were removed.

Nastassia Foose
Faculty Sponsor(s): Steven Burg

Envisioning Internment: The Struggles, Community, and Impact

The subject for this display is the graphic memoir Citizen 13660 written by Miné Okubo in 1946. The memoir details Okubo’s experience as a Japanese-American during World War II and her time in the internment camps established by FDR. Our purpose will be to use this memoir to examine the growing racial divide between Japanese-Americans and other Americans before and during World War II. It will consider Okubo’s use of contrasting words and images in portraying the struggles Japanese-Americans faced in the internment camps, but also how they still created a community. The exhibit will also explore how Okubo’s book was used as propaganda by the US government. Diving into Okubo’s struggles surrounding a topic seldomly spoken about will allow the audience to see the major impact internment had on Japanese-Americans. We will be creating a poster and using images from the novel and historical photographs to convey Okubo’s experiences in the internment camp to recorded history.

Trevor Madsen, Jenna Robbins, Melanie Ryan, Cameron Tinner
Faculty Sponsor(s): John Bloom

Most Beautiful Scientist in the World: Hedy Lamarr

I will be focusing on the life and technological inventions of the most beautiful women in the world, Hedy Lamarr. I will be focusing on her early life up to her first steps into the scientific world. I want to focus solely on her inventions and not her acting career. I feel like that is the part of her life that does not get as much publicity. I want to be able to fully cover how her inventions changed the world and why they are just as important as her acting career.

Margaret Gutshall
Faculty Sponsor(s): Steven Burg
Rhetorical Analysis of Slobodan Milošević
This project attempts to answer some questions that hope to enlighten why the Serbian people supported Slobodan Milošević even during the bloodiest moments of his presidency. Even today, opinion polls show that there is still a strong percentage of people who believed that he was a good leader and widely misunderstood. Furthermore, this essay will define the sociological term, ‘cult of personality’ and attempt to use it at a lens to, perhaps, understand his nearly unwavering support. In order to do this, his rhetoric will be dissected to discover if any correlations can be made. If Milošević does in fact fall into the defined category of a leader that displays “cult of personality” traits, it could further contribute to the commonly contested scholarly idea that immoral but charismatic national leaders can manipulate the populace into embracing oppression and turn their hatred toward an “other;” in this case the majority of non-Serbian Yugoslavia and the “interventionist west.”

Paul Pepi
Faculty Sponsor(s): Allan Dieterich-Ward

The History of the Colosseum: Geography, Gender, and Religion in Ancient Rome
These students in Dr. Pierce’s HIS 105 class researched the history of the Colosseum and tied it into the larger themes of geography, gender, and religion in ancient Rome. They also built a replica of the Colosseum. Their poster will summarize their research and they will also have their model featured on a table.

Morgan Louer, Lindsay Smolensky
Faculty Sponsor(s): Gretchen Pierce

Shippensburg University Turns 150
As the undergraduate research assistant in the University Archives, I am aiding the research team in preparation for the 150th anniversary of the founding of the university in 1871. The 150th will take place in 2021. The main goal of the project is to create a book based on the social history of Shippensburg University. Our research has consisted of looking over scrapbooks, photos, student and faculty documents, school newspapers and newsletters, and personal collections in the archives. The book will include every important detail, interesting stories, great pictures, and the memories in which the Alumni will hold in their hearts forever.

Brandon Fisher
Faculty Sponsor(s): Steve Burg

Women’s Role in DC Comics: A Focus on Black Canary
This research has aimed to look at how DC Comics reflects gender attitudes. The paper looks at how women are treated on their own and when there is a man around. I compare Black Canary’s solo comic line in 1993 and Black Canary’s comic book line with the Green Arrow running from 2007–2010. Black Canary is a popular female character in DC Comics and commonly is paired with the Green Arrow. Using the comics, we see how comics are a reflection of the attitude society has toward women. Different aspects that are looked at in this paper is the artwork, the storylines, and the reviews from the readers. These aspects show the treatment of Black Canary and how she comes across to the audience.

Amanda Partner
Faculty Sponsor(s): Steven Burg
**MATHEMATICS**

**Machine Learning for Mammograms**
Using a publicly available data set of over 300 mammograms, we examine applications of convolutional neural networks (CNNs) to identify/classify cancerous tumors. These computational models are industry standard in image processing and have the potential to revolutionize medical imaging diagnostics. We will consider using CNNs to determine features of a tumor such as its center, radius, and type (benign or malignant).

Levi Nicklas

**Faculty Sponsor(s):** Lance Bryant

**Optimization on Cooking Pizzas**
When we cook frozen pizzas is it necessary to actually preheat the oven? With convectional mini ovens being an affordable and readily available option for college students and many others, we explore cooking pizzas in a mini oven without preheating. We show that skipping preheating saves us both energy and time. Through this research, we suggest the optimal cooking method, with the optimal time and temperature to set up a convectional mini oven for cooking frozen pizzas. Our research is supported with data collection and mathematical models that were created using excel and Mathematica.

Conner Oldt

**Faculty Sponsor(s):** Ji Young Choi

**PHYSICS**

**Solar Winds and Their Consequences for Our Atmosphere**
Solar winds are an unfinished sub-field in astrophysics. We know what the winds are made up of and we understand what the consequences are for an atmosphere when not protected by a magnetic field. Life on earth is only possible as we know it today because of our atmospheric conditions. The problem resides therein that when our magnetic field flips (as it does approximately every seven thousand years) it disappears for an unknown amount of time. The temporary lack of a magnetic field leaves our atmosphere vulnerable to the solar winds. The short-term goal of this research project is to better understand the dynamics of solar winds and how they would affect atmospheric conditions on earth when our magnetic field disappears when it flips. The long-term goal of this research is to develop and engineer the magnetic fields necessary to design a solar umbrella to not only protect earth in the case that it is needed to protect our livelihoods, but also to protect Mars’ atmosphere.

Daniel Brown

**Faculty Sponsor(s):** Michael Cohen

**POLITICAL SCIENCE**

**Food Security and Land Rights**
Food security and land rights are topics that international communities have been discussing for decades. While states may not have promoted food rights policies, other policies at the national level have been pursued to increase the production and availability of food. With 815 million undernourished people in the world and a global population increase to nearly 10 billion people by 2050, effective policies are needed quickly to correct current deficiencies and prepare for the increased pressure on world resources over the next few decades. Understanding the connection between food security and other variables is useful in providing knowledge to guide policy proposals. There is a mix of evidence on the significance of the relationship between land rights policy and food security. The aim of this study is to determine the effect of land tenure security, in particular the removal of ambiguity between customary law and statutory law through clear registration of land titles, on food security. In order to accomplish this task, a causal comparative approach is adopted on four countries: Uganda, Rwanda, Tanzania, and Kenya from 1990-2015. The countries highlight a range of social compositions in a region that is affected heavily by food security inhibitors and differences in land ownership.

Quentin Clapper

**Faculty Sponsor(s):** Sara Grove
Homicide Rates and Cultural Norms

Homicide is a cultural phenomenon that peaks the interest of many individuals. While homicide rates are influenced by development and economic status, cultural influences can play a role as well. This paper will extend the idea that homicide rates can be influenced by culture and will look to religion, education level, and law enforcement to explore potential correlations.

Sarah Lecher

Faculty Sponsor(s): Sara Grove

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John and Sarah Livingston Jay: Society and Diplomacy and in the American Revolution

John and Sarah Jay are among America’s forgotten Founding Fathers and Mothers. Sharing a joint role in shaping US diplomatic traditions abroad during Jay’s time as Minister to Spain, 1779–1782, they had a powerful impact together on furthering American nation-building. Their diplomatic approach in Spain laid the groundwork for the acceptance of American values and ideals abroad. Sarah Jay set precedent by accompanying her husband on this diplomatic mission. As his advisor and hostess, she set a powerful example for women in overcoming societal gender limitations and expectations, thus paving the way for the future of women in American diplomacy. Despite its importance, to the extent that the Jays’ mission has been researched, it has generally been dismissed as a failure. Sarah Jay’s role in the mission is equally unexamined. This thesis will add new insight into the long-term impact of the Jays’ joint service in Spain in shaping American society and diplomacy.

Rachael Rudis

Faculty Sponsor(s): James Greenburg

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Nuclear Power in the Modern Political Era

As a result of prolonged political opposition, many nuclear sites have closed or halted construction. Only one new nuclear reactor has been commissioned since the political opposition resulting from the Three Mile Island accident on March 28, 1979. Many of these fears come with the instability of uranium as a source of nuclear fuel, particularly related to radioactivity, weaponization, and resource scarcity. Research indicates that these obstacles may hinder the advancement of future nuclear energy technologies; one of the potential advancements is the use of thorium as a nuclear fuel source. The scientific community argues that thorium does not face the similar political and technical obstacles as uranium. Given that such potential advancements in nuclear fuel are possible and yet there remains significant political opposition to nuclear power this research asks the question “is there a disconnect between policy makers and practitioners regarding the future development of nuclear power in the United States?” This project aims to see if policy makers and practitioners disagree about the future of nuclear energy. To measure perceptions about the future of nuclear energy among these stakeholders, this project employs a qualitative research design. The data is primarily derived from first hand interviews with current and former state elected officials and nuclear industry employees. The interviews will help fill in the gap between industry officials and policy makers to show how nuclear power can overcome the obstacles it faces in the modern political era.

Zachary Gates

Faculty Sponsor(s): Michael Moltz

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Tax Cuts and Job Creation: Is There A Correlation?

This poster examines the relationship between tax cuts and job creation, focusing on tax cuts under three administrations (Kennedy, Reagan, and Clinton) as case studies.

Taylor-Marie Everts

Faculty Sponsor(s): Sara Grove
The Impact of Latin American Indigenous Societies in Anti-Deforestation Efforts

Melting ice in the Arctic has started to create questions about navigation and accessibility of resources. Countries, including Canada, Russia, and the United States, are preparing to secure their stakes throughout the icy region. Their competing interests and interpretations of international law is likely to lead to tensions. This paper examines traditional regimes governing Arctic waters and analyzes the implications of the polar melt. The paper concludes with considerations for changes to the traditional legal framework for the Arctic region.

Chloe Flemion
Faculty Sponsor(s): Sara Grove

The Treatment of Political Dissidents

As the rise in authoritarianism occurs throughout the world, the actions taken by governments to silence political dissidents has managed to reach new levels of extremes. From the use of paid bounty hunters in China to stop potential protesters rallying against government action to the Bangladeshi police arresting those who take to social media to voice a dissenting opinion, political dissidents face a variety of punishments within different states. The goal of this paper is to examine China, Bangladesh, and Thailand in regard to their treatment of dissidents.

Aven Bittinger
Faculty Sponsor(s): Sara Grove

Burnout Among Peer Specialists and Other Mental Health Service Providers: A Comparative Analysis

Peer specialists are individuals who, based upon their own lived experience with mental illness as well as completion of training, provide support for others with mental illness. Provision of mental health care is a high burnout field, so there is reason to worry about emotional exhaustion (a primary indicator of burnout) among peer supporters. There is some indication that levels of burnout among peer providers are equivalent to those of other providers (e.g., Park et al., 2016) but a subsequent pilot study found lower rates of burnout among peer specialists (e.g., Scheetz, McQuaid, Bennett, and Weikel, 2016). This study is a comparative investigation of burnout levels among peer and non-peer providers of mental health services with examination of possible predictors.

Melise Bradley, Thomas Fisher, Lindsay Walker, Tish Weikel
Faculty Sponsor(s): Kim Weikel

Creating an Operant Laboratory Experiment: Color Discrimination in Goldfish

This project sought to create an alternative to teaching basic operant conditioning techniques with rodents by developing a means to illustrate stimulus discrimination for an operant laboratory experiment for use with goldfish. It utilized two comet goldfish, and after food wand training, subjects were trained to swim through a colored hoop in the presence of a light the same color as the hoop using a food reinforcer. Subjects were trained individually, and were required to swim through the colored hoop that corresponded with the light presented in order to earn the food reinforcer, demonstrating color discrimination. Data was recorded and presented graphically on sheets created specifically for use with this procedure. This experiment will teach future students about shaping and stimulus discrimination, foundational concepts in the field of behavior analysis. This process was a part of a larger project that aims to create a complete operant lab manual for use with goldfish.

Morgan Mellott
Faculty Sponsor(s): Kathryn Potoczak

Creating an Operant Laboratory Experiment: Fixed-Ratio Responding in Goldfish

This project sought to create an alternative to teaching basic operant conditioning techniques with rodents by developing a means to illustrate fixed-ratio (FR) schedules of reinforcement for an operant laboratory experiment for use with goldfish. It utilized four comet goldfish, and after food wand training, subjects were trained to nose tap a specific-shaped (star, square, circle, or triangle) plastic stimulus for a food reinforcer. Once the nose tap was acquired, subjects were required to nose tap the training stimulus progressively more times in order to earn the food reinforcer, up to FR8. Data was recorded and presented graphically on sheets created specifically for use with this procedure. This experiment will teach future students about the operant conditioning concepts of shaping (teaching a new behavior using successive approximations, positive reinforcement, and extinction) and intermittent reinforcement (ratio schedules).

Thomas Fisher, Grace Ramacciotti
Faculty Sponsor(s): Kathryn Potoczak
Effects of WIN 55,212-2 on Inhibitory Control in Adolescent Mice

The purpose of this research was to examine the effect of the synthetic cannabinoid receptor agonist WIN 55,212-2 (WIN) exposure during adolescence on the development of inhibitory control among mice (Mus musculus). A total of forty CD-1 IGS outbred mice were included in the study. Mice in the experimental group received 3 mg of WIN per kg of body weight through subcutaneous injection each day, from postnatal day thirty to postnatal day fifty. Mice in both the experimental and control conditions were examined on the detour paradigm of animal cognition starting at postnatal day 70.

Tara Lafferty, Alyssa Lauer  
Faculty Sponsor(s): Robert Hale

Heart Rate Variability in relationship with Antisocial Behavior in College Students

This study examined the relationship between antisocial behavior symptoms (ABS) and emotion regulation in a sample of fourteen Shippensburg University students. The STAB test was used to measure antisocial behavior symptoms across three subtypes: physical aggression, social aggression, and rule breaking. Subjects completed an online survey consisting of questionnaires. For purposes of analysis, two ABS groups were formed based on a median split of subjects’ scores on the STAB. Heart Rate Variability (HRV), measured by root mean squared (RMSSD) and high frequency (HF), was determined using a pulse transducer. RMSSD and HF were recorded under three-minute baseline, congruent Stroop, incongruent Stroop, and recovery conditions. The findings suggest that there is no relationship between antisocial behavior symptoms (ABS), as measured by the STAB, and emotion regulation, as measured by HRV (RMSSD and HF).

Dwayne Ellis, Victoria Madrak, Brody Weibley  
Faculty Sponsor(s): Robert Hale

Story Complexity

This study investigates the processing impact of hyperbolic speech when it is consistent or inconsistent with other numeric material in a passage. Participants will be presented with ten individual stories by computer and asked to recall numeric values presented in those stories. Reading times and memory accuracy are measured and analyzed to determine the impact of matched (literal utterance-literal value, hyperbolic utterance-hyperbolic value) and mismatched (literal utterance-hyperbolic value, hyperbolic utterance-literal value) conditions. The first hypothesis is that readings times will be longer in the mismatched conditions than in the matched conditions. The second hypothesis is that the numerical memory accuracy will be greater in the matched conditions compared to the mismatched conditions. Findings from this study may be used to increase awareness on how hyperbole influences our memory for information and contribute to broader literature within cognitive psychology.

Elizabeth Robinson, Morgan Shumaker, Sean Weidner  
Faculty Sponsor(s): Brittany Harman and Lea Adams

An Investigation Into Adolescent Self-Harm and the Pennsylvania Student Assistance Program

Non-suicidal self-harm is increasingly common among teenagers. The Pennsylvania Student Assistance Program, also known as SAP, is implemented into public schools in Pennsylvania to help children who be experiencing emotional, social, or mental health concerns—including self-injury. This research project, conducted at Chambersburg Area School District, investigates the number of students with reported self-harm and how many of those students have received services for this issue and compares that data to self-disclosure of self-injury in the Pennsylvania Youth Survey. This research project also addresses possible causes for under reporting of self-harm, both by referral or self-disclosure.

Katlyn Michaels  
Faculty Sponsor(s): Michael Lyman
Class Size Reduction in Elementary Alternative Education

River Rock Academy is an alternative education program where students from first grade all the way up through twelfth grade attend. This study will look at the first through third grade students in River Rock's pebbles classroom and see if class size affects students' behavior and academic success. The produced findings that are hypothesized are that smaller class sizes will have a positive correlation with behavior and academic success within students.

Colton Sentz
Faculty Sponsor(s): Jennifer Clements

Correlation Between FAST Assessment Tool and Family Service Plan

I am researching the correlation between our agency’s FAST assessments and the family service plans. The FAST assessment tool is a questionnaire about how the family acts and reacts to certain topics. These are then rated according to their risk. Items rated a two-three (high risk) need to be placed into the family service plan as a task or goal. The hope is that the caseworkers use this tool to create the plan, but not every caseworker does. My research will let the agency know whether the caseworkers are using these tools properly.

Elizabeth Ziemba
Faculty Sponsor(s): Jennifer Clements

The Meta Research Club: An Analysis of the Social Work Research Club by the Social Work Research Club

The Social Work Research Club is an engaging setting for students, in the Social Work Department and other majors, to help broaden their experience with research. The goal is to learn in a relaxed setting so that they can build on their strengths and grow where growth is needed without the stress of being graded. This year, the Social Work Research Club will be reporting on qualitative research on the impact research club has had on former members. The results will include an analysis of interviews conducted with prior members who have participated in the club from the years 2008-2018. The results suggest that there are many unique benefits to participating in the Social Work Research Club.

Adolfo Alvarez, Tori Bender, Monica Decarlo, Erin Eshelman, Tiffany Muthler, Jaida O’Neal-Sloane, Omar Rayo, Emily Stottlemeyer, Kimberly Washington, Bridgette Wentz
Faculty Sponsor(s): Michael Lyman

Veterans and Post-Traumatic Stress Disorder

In this study, the incidence of Post-traumatic Stress Disorder and substance abuse in veterans is what is being analyzed. This is a quantitative study that is using data collected by the Franklin County Veterans Affairs Operation Reach Program. The data comes from intake forms that are used when the veterans receive services from the program. When the data is collected, it will be analyzed to assess the frequency of how often veterans with Post-traumatic Stress Disorder have substance abuse issues as well.

Amanda Irwin
Faculty Sponsor(s): Jennifer Clements

Societal Norms: The Impact of Gender Stereotypes on the LGBT Community

Society has always had ideas on what each gender should and should not do. The author has decided to look at various gender ideas in society and analyze how they affect things such as coming out as well as how these norms have possibly changed over time to allow more freedom or even become more restrictive in certain areas. This paper will also focus on what prevents people from coming out. Aspects such as religion, peer pressure, family history, and the like will all be discussed and presented as both contributing factors as well as enlightening and freeing factors in the coming out process.

Stephanie Buck
Faculty Sponsor(s): Ying Yang

The Effects of Personality on Students’ Social Capital, Academic Success, and Their Overall Experiences at Shippensburg University.

This research study attempts to understand how personality type affects social capital, academic success, and overall experiences of Shippensburg University students. By comparing qualitative and quantitative variables such as GPA, gender, personality type, and future goals, correlations can be determined based upon survey data gathered from 500 Shippensburg University students, or roughly 7 percent of the university’s student population. Results of this study can be used by Shippensburg University officials to better current recruitment and retention practices as well as widen the university’s scope of inclusion for all student populations, including personality type.

Michael McKinney
Faculty Sponsor(s): Ying Yang
Early Math Curriculum: 
Training Teachers in Rural Jamaica

Teacher candidates from Shippensburg University have traveled to Petersfield, Jamaica, for the past three years. The need for curriculum and support for the early childhood schools are great, and teacher candidates from Shippensburg have never designed curriculum to take with them. After researching best practices in early math development, we have created lessons relating to mathematical content for children in first and second grade, including possible adaptations. All of our lessons are compiled into a curriculum manual and contain all of the materials that are needed for the lessons. The teachers in Petersfield currently do not have the resources and materials to support their students, and so the children continue to lack strong computational skills. By investing in quality early education, we can support the children in having an adequate early learning opportunity.

Hannah Fisher, Allyson Lutz, Jacquelyn Miller, Kelsey Olsen, Megan Pine, Shelby Rhoten, Makayla Smiley

Faculty Sponsor(s): Andrea Malmont
See map of poster locations on insert.
VISUAL AND PERFORMING ARTS
Hidden Souls: The Human Truth Behind Everyday Objects

We are constantly surrounded by the complexity of the human condition, moving through a forest of stories we never notice. Inspired by snippets from the real world as well as unique artwork, these fiction writers pierce the veil of the surface-level to shed light on what it is to be alive. Each flash fiction will be accompanied by a visual image that served as a catalyst for the story.

Emily Bush, Molly Foster, Luke Hershey, Denice Lovett, Selena Melero

Faculty Sponsor(s): Neil Connelly

Brass Class Presentation

MUS 270, Brass Class, provides each student the opportunity for guided practice and study of the performance characteristics of two brass instruments: Trumpet or Horn and Trombone or Tuba.

By the end of the semester, students will have progressed to have the ability to perform at an elementary/intermediate level. Students will form small chamber groups and practice/perform literature representing their accomplishments throughout the semester.

Bradley Davis, Zachary Davis, Calvin DiMaggio, Marayna Dorsey, Marianna Echeverry, Hannah Famulare, Maggie Myers, Emily Osilka, Casey Petrie, Emma Rikas, Bradford Shughart, Sydnie Simmons, Vincent Tinucci

Faculty Sponsor(s): Trever Famulare

SU Student Playwrights in Performance

Two original student plays will be performed.

Pagliacci Justice by Benjamin Greenberg was performed last semester as part of SU’s YONDERSPEAK Festival of Short Plays. Pagliacci Justice depicts an encounter in a police interrogation room between a police officer and the character of Bubbles the clown. It will feature SU senior, Demetrius Laster and SU professor of history, Dr. Catherine Clay

Drama Whore is a short work written and performed by Katy Hargrove. This monodrama depicts a young girl’s audition encounter with her high school drama club.

Benjamin Greenberg, Katherine Hargrove, Demetrius Laster

Faculty Sponsor(s): Paris Peet
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