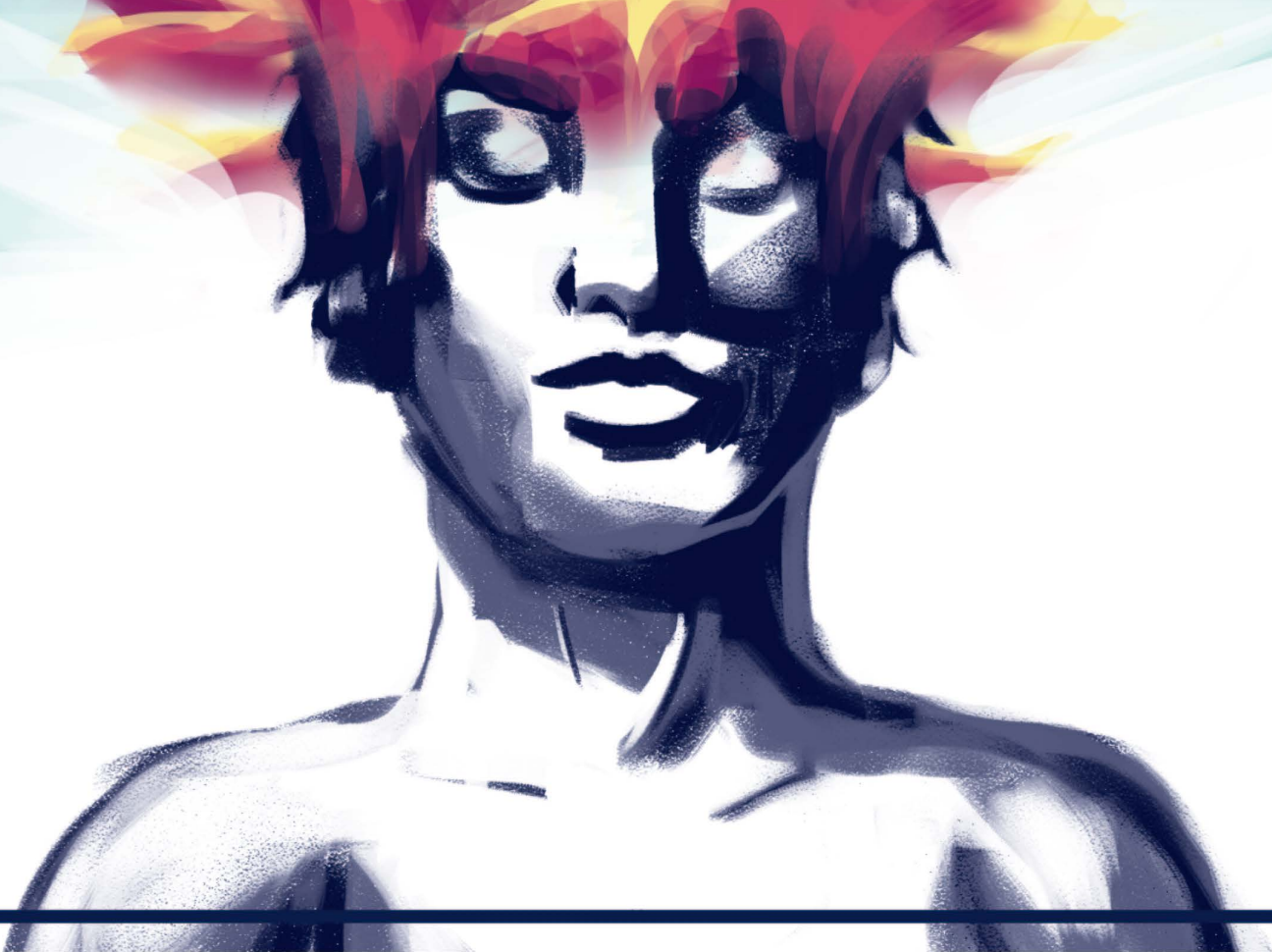


# APEIRON

Friday, April 19, 2024



The Apeiron is an ancient term offered by Anaximander of Miletus in the 6th century B.C. that embraces the spirit of this forum. As with the Apeiron, which is infinite and boundless, all inclusive, eternal, and unaging, this forum is designed to be inclusive with respect to student research, scholarship, creative activities, and community engagement. It is dedicated to the proposition that students are capable of work that knows no limits and transcends all boundaries.

Each student participant in the Washburn University Apeiron has worked on his or her project under the supervision of a faculty mentor. The projects, which have been reviewed by the faculty, demonstrate creativity, originality, and a level of work superior to that normally expected of students. Today's presenters exemplify the spirit of the Apeiron.



[www.washburn.edu/apieron](http://www.washburn.edu/apieron)

*☞ The Greek Alphabet ☞*

A α	Alpha	N ν	Nu
B β	Beta	Ξ ξ	Xi
Γ γ	Gamma	Ο ο	Omicron
Δ δ	Delta	Π π	Pi
E ε	Epsilon	Ρ ρ	Rho
Z ζ	Zeta	Σ σ	Sigma
H η	Eta	Τ τ	Tau
Θ θ	Theta	Υ υ	Upsilon
I ι	Iota	Φ φ	Phi
K κ	Kappa	X χ	Chi
Λ λ	Lambda	Ψ ψ	Psi
M μ	Mu	Ω ω	Omega

# Table of Contents

---

Washburn University Campus Map .....	2
Schedule of Events .....	3
Distinguished Lecture .....	4
Fine Arts Presentations (Abstracts).....	5
Schedule of Oral Presentations .....	6
Oral Presentations (Abstracts).....	7
Poster Presentations (Abstracts).....	17
Reception Menu .....	37
Apeiron Committee .....	38
Index of Presenters and Mentors .....	39



Robert J. Dole Hall

Washburn Indoor Athletic Facility

Falley Field

Washburn Village

Gahnstrom Field

KBI

Tennis Courts

Lee Arena

Petro

Whiting Field House

SRWC

Art Building

Practice Field

Yager Stadium

Mabee

Henderson

KTWU

Lincoln Hall

Carnegie Hall

Memorial Union

iHouse

Benton Hall

Zeta Tau Alpha House

Alpha Phi House

Stoffer Hall

Bennet Computer Center

Morgan Hall

Garvey Fine Arts Center

White Concert Hall

LLC

1731 Plass

Kuehne Hall

Bradbury Thompson Alumni Center

Washburn University Alumni Association and Foundation



Washburn University  
Virtual Tour Map

*April 19, 2024*

## *Schedule of Events*

- 9:30 a.m.** **Student Registration**  
*Memorial Union, Washburn A & B Lobby*
- 10:30 a.m. – 12:15 p.m.** **Fine Arts Presentations**  
*Rita Blitt Gallery*
- 1:00 p.m. – 2:50 p.m.** **Oral Presentations**  
*Henderson Learning Resources Center  
Rooms 107, 207, 208, 304, 307, 308*
- 3:00 p.m. – 3:45 p.m.** **Welcome**  
*Memorial Union, Washburn B*
- Dr. JuliAnn Mazachek  
President, Washburn University
- Dr. Courtney Sullivan  
Chair, Apeiron Committee; Professor of French
- Recognition of Student Designers**  
Rob Coffelt, Graphic Designer, University Mail & Printing Services  
*Student Designers: Jane Steinkuehler and Sydney Achilles*
- Introduction of Distinguished Lecture**  
Dr. Melanie Burdick, Professor of English
- Distinguished Lecture**  
Dr. Sandra Tutwiler, Professor Emeritus of Education
- 3:50 p.m. – 5:00 p.m.** **Poster Session and Reception**  
*Memorial Union, Washburn A*  
Poster Session 1 (odd-numbered posters): 3:50 p.m. – 4:25 p.m.  
Poster Session 2 (even-numbered posters): 4:25 p.m. – 5:00 p.m.

---

Washburn University Theatre presents  
*Witch*, by Jen Silverman  
Opening Night: April 19 @ 7:30 pm  
Neese Gray Theatre, Garvey Fine Arts Center  
Scan the QR code for more information.



The 2024 WIFI Film Festival starts  
this Saturday (April 20).  
Scan the QR code for full schedule.





# *Distinguished Lecture*

“Embracing Difference as an Act of Caring”

presented by

Sandra Winn Tutwiler, Ph.D.

Professor Emeritus of Education

Memorial Union – Washburn B

3:00 p.m.

Sandra Winn Tutwiler is professor emeritus of education. She received a BA from Northeastern Illinois University in Psychology/Education, a MSE from Illinois State University in Guidance and Counseling, and a PhD from the University of Texas-Austin in Curriculum and Instruction: Educational Foundations and Policy Studies. She taught and/or counseled students in elementary, middle school, high school, and community college before becoming a teacher educator.

Prior to joining the Washburn faculty in 1999, she was Associate Professor, Education Department Chair, and inaugural Director of the Center for Excellence in Urban Teaching at Hamline University, St. Paul, Minnesota. During her tenure at Washburn, she served as Department Chair (2001-2006), University Coordinator for Assessment (2000-2004), and the inaugural Diversity Fellow for the Center for Teaching and Learning (C-TEL). Dr. Tutwiler taught graduate and undergraduate courses in educational foundations, educational psychology, and graduate courses in educational research. Her interest in assessment and evaluation led to program evaluation beyond the university, as she chaired teacher education program review and accreditation committees at the state and national levels for many years.

Dr. Tutwiler's primary research interests are school and family relations, and the schooling experiences of children and youth who are not always well-served by education systems. She is the author of *Mixed-Race Youth and Schooling: The Fifth Minority*, and *Teachers as Collaborative Partners: Working With Diverse Families and Communities*. She is also the author of multiple book chapters and articles that address inclusion and diversity in teaching practices.



# Fine Arts Presentations

10:30 a.m. – 12:15 p.m.

*Rita Blitt Gallery*

*WUmester* denotes WUmester topic

► 10:30 a.m. – 10:45 a.m.

## *The 5 Senses of Quebec City*

**Yuri Lima**

Mentor: Courtney Sullivan, Modern Languages

I will be presenting my photos and experiences of my trip with the French Club to Quebec City, Canada. Using images and videos I will break down the experiences in a creative way by using the 5 senses; sight, smell, taste, hearing, and touch.

► 10:45 a.m. – 11:45 a.m.

## *A Look into David Maslanka's Compositional Techniques*

**Dylan Rizzo**

Mentors: Kelly Huff and Von Hansen, Music

David Maslanka, American composer born 1943 and alive until 2017, is cited to be a very pivotal composer to the world of wind band literature, writing 50 band pieces out of his 152 total works. Within this presentation music student Dylan Rizzo, a regarded fan of Maslanka, will talk at length about Maslanka's compositional techniques and approaches to composition, with the information being put to use by orchestrating one of Maslanka's piano pieces, *Beloved*, for full wind ensemble, showing how Dylan used the compositional techniques of David Maslanka to imitate his writing and create the orchestration as close to what Maslanka might have done. Following the talk there will be a Q and A session, where audience members can ask any questions about Maslanka that they wish, with Dylan answering to the best of their ability. Come learn about David Maslanka, and how his music sounds so like him.

► 11:45 a.m. – 12:15 p.m.

## *Confirmation, A Short Film Script*

**Peter E. Sandquist**

Mentor: Sam Finch, Mass Media

*WUmester*

Grace, a nonbinary Catholic, decides to join an LGBTQ+ book group. However, they meet during Sunday service, so Grace is caught between attending the book group and listening to their husband about going to church. This short script is a story of belonging, coexistence, and understanding with and within communities in a world where sometimes these qualities are lacking.

## Schedule of Oral Presentations

(HC = Henderson Learning Resources Center)

<b>Time/Location</b>	<b>Presenter</b>	<b>Presentation Title</b>
<b>1:00 pm – 1:20 pm</b>		
HC 304	Brooke Petersen	<i>The Anti-Woman Phenomenon in Young Adult Fiction Written for Women by Women</i>
HC 208	Andrew Mullen, Basil Schmitz, and Triston Burr	<i>Just Cook It</i>
HC 307	Kyle James Wolnik	<i>A Fractured Constitution: Constructions of American Law in the Cold War</i>
HC 107	Cole Warner and Andrew J. Schmidlein	<i>Topeka Metro Bike Data Analysis, Part 1</i>
HC 308	Anna Rose Anderson	<i>Local History and Its Importance: A Reflection of My Time at the Kansas State Historical Society</i>
<b>1:30 pm – 1:50 pm</b>		
HC 304	Codi P. Thompson, Maria J. Tardiff, Kaili P. Stumbo, Aja B. Carter, and Tiffany Mack	<i>Trends in Creative Writing: Washburn Students Report About Their Discoveries at the World's Largest Writers Conference</i>
HC 208	Tobin C. Gearhart, Patrick W. Sandquist, and Daniel Warren	<i>Howitzer Automatic Machine Penetration Methodology Software</i>
HC 307	Sierra Jeter	<i>The Link Between Democracy and Corruption in Latin America</i>
HC 107	Julian A. Zamora, Aditya Joshi, and Emily M. Reb	<i>Topeka Metro Bike Data Analysis, Part 2</i>
HC 308	Chloe Ruth Chaffin	<i>Bonner &amp; Poverty Studies Capstone - Loud Light &amp; URGE</i>
<b>2:00 pm – 2:20 pm</b>		
HC 304	Humphry Isaiah Del Castillo	<i>In Retrospect: A Cinematic Travel Film</i>
HC 208	Jeff Williams, Lucas Sands, and John B. Smalley	<i>H.E.A.R.T. – Helpdesk Execution and Resolution Tracker</i>
HC 207	Keetan B. Munsell	<i>Determining the Reproductive Demographics of Ornate Box Turtles (<i>Terrapene ornata</i>) via Ultrasonography Over Two Years</i>
HC 307	Daniel J. Shaffer	<i>The Relationship Between Religiosity and Crime</i>
HC 107	Catherine D. Wools and Sumnima Limbu	<i>Unveiling Fraud in the Cannabis Industry: A Data Investigation on Legal States Cannabis Lab Testing, Part 1</i>
HC 308	Randy Gogel	<i>Breaking free from the Gridlock! Enhanced Efficiency and Efficacy in the Emergency Department</i>
<b>2:30 pm – 2:50 pm</b>		
HC 208	Abby E. Davis	<i>Marketing, Messaging, and Promotions: Engaging in an Authentic Learning Experience with the WIFI Film Festival</i>
HC 207	Alessandro Di Gregorio	<i>Development of Synthetic Atmospheric Ozone Profiles for Study of Supernova Effects on Climate Change</i>
HC 307	Michael Gallegos	<i>How Dupont Poisoned You</i>
HC 107	Devon Alyse Doherty, Brock S. Robert, and Blaire Baker	<i>Unveiling Fraud in the Cannabis Industry: A Data Investigation on Legal States Cannabis Lab Testing, Part 2</i>
HC 308	Desiree Cain	<i>Healthcare Around the World: Comparing Systems and Mental Health Coverage</i>



# Oral Presentations

1:00 p.m. – 2:50 p.m.

*Henderson Learning Resources Center*

*WU*mester denotes WUmester topic

*WTE* denotes Washburn Transformational Experience

---

## *Session α*

Moderator: Adebanke Adebayo

---

► 1:00 p.m. – 1:20 p.m.

Henderson Learning Resources Center, Room 304

*The Anti-Woman Phenomenon in Young Adult Fiction Written  
for Women by Women*

**Brooke Petersen**

Mentor: Corey Zwikstra, English

*WTE*

My presentation is an analysis of the phenomenon that occurs in young adult fiction written for young women by women whereby a female protagonist becomes "not like other girls." The project will examine how the "not like other girls" trope is harmful (to characters and readers) along with similar topics such as how love interests in recent young adult romance novels are abusive but shown as perfect, how most real-life women learn to shift away from the "not like other girls" mindset, and how complex female characters are often simplified and misinterpreted in media.

► 1:30 p.m. – 1:50 p.m.

Henderson Learning Resources Center, Room 304

*Trends in Creative Writing: Washburn Students Report About Their  
Discoveries at the World's Largest Writers Conference*

**Codi P. Thompson, Maria J. Tardiff, Kaili P. Stumbo, Aja B. Carter, and  
Tiffany Mack**

Mentor: Dennis Etzel Jr, English

Five students each give an oral presentation about what cutting-edge writing approaches and techniques they discovered while attending panels at the AWP Conference which was held in Kansas City this year. This panel is sure to be insightful and inspirational.

► 2:00 p.m. – 2:20 p.m.

Henderson Learning Resources Center, Room 304

***In Retrospect: A Cinematic Travel Film***

**Humphry Isaiah Del Castillo**

Mentors: Courtney Sullivan, Modern Languages; Sam Finch, Mass Media

Why are things always more obvious in retrospect? Looking back, you see the mistakes you made, and it can be annoying to see how obvious or simple the solutions were. If only you could connect the dots before you were in too deep. Perhaps there's a better way to connect said dots. In this presentation, budding filmmaker Humphry Del Castillo, a junior mass media major, screens his first ever travel film. With the French Club, Del Castillo traveled to Quebec City to experience its annual winter carnival, immerse himself in the culture of a French-speaking country and push himself out of his comfort zone with an ambitious project. Unfortunately, the plan for this project fell apart and Del Castillo was forced to reflect and think on his feet to improvise a new project. The original project came with an array of roadblocks some of which could have been easily overcome with a simple shift in perspective. Ultimately, navigating the roadblocks led to the creation of *In Retrospect: A Cinematic Travel Film*. Through this presentation, viewers will explore a journey of chasing your ambitions and overcoming the difficulties along the way.

---

***Session β***

**Moderator: Nan Sun**

---

► 1:00 p.m. – 1:20 p.m.

Henderson Learning Resources Center, Room 208

***Just Cook It***

**Andrew Mullen, Basil Schmitz, and Triston Burr**

Mentor: Nan Sun, Computer Information Sciences

Just Cook It is a mobile application designed to keep track of pantries and search for recipes. This application allows users to view the contents of their pantry, search for recipes by name or ingredient, and add and share recipes with other users. After selecting a recipe to view, users will see all ingredients required for the recipe, with the ingredients they have in their pantry highlighted. Recipes will also include measurements, steps, and user reviews. Just Cook It is developed using Visual Studio Code, React Native, Expo, and SQLite.

► 1:30 p.m. – 1:50 p.m.

Henderson Learning Resources Center, Room 208

***Howitzer Automatic Machine Penetration Methodology Software***

**Tobin C. Gearhart, Patrick W. Sandquist, and Daniel Warren**

Mentor: Nan Sun, Computer Information Sciences

This project implements an automated penetration testing tool for individuals or entities with limited experience. The proposed solution, named "Howitzer," aims to leverage features of existing tools like Burp Suite and Metasploit in a user-friendly, Graphical User Interface (GUI) environment. The system will utilize a proprietary network operating system detection features to identify potential vulnerabilities based on device type, version number, and running services. By integrating with the CVE, Raid7, PacketStormSecurity, 0DayToday, and cxsecurity databases, Howitzer will curate applicable exploits tailored to the specific target information. The tools used in this project are: Java and MariaDB.

► 2:00 p.m. – 2:20 p.m.

Henderson Learning Resources Center, Room 208

***H.E.A.R.T. – Helpdesk Execution and Resolution Tracker***

**Jeff Williams, Lucas Sands, and John B. Smalley**

Mentor: Nan Sun, Computer Information Sciences

In today's dynamic technological landscape, efficient handling of technical support requests is paramount for organizations to maintain smooth operations and user satisfaction. Our project aims to develop a comprehensive yet lightweight web-based Helpdesk Management System tailored to meet the needs of modern businesses. This system centralizes ticket management by facilitating the submission, assignment, tracking, and resolution of technical issues reported by users. It incorporates user authentication and leverages database-centric analytics. It optimizes the workflow for helpdesk staff and end-users and promises to enhance productivity, streamline communication, and elevate the overall quality of technical support services. The tools used in this project are: Python, Django, HTML, SQLServer, SSMS, Azure, Github, and ChatGTP 3.5.

► 2:30 p.m. – 2:50 p.m.

Henderson Learning Resources Center, Room 208

***Marketing, Messaging, and Promotions: Engaging in an Authentic Learning Experience with the WIFI Film Festival***

**Jess Seidel, Charlize Easter, Malachi A. Lewis, Karli J. Bayliss, and Abby E. Davis**

Mentor: Kristen Grimmer, Mass Media

WUmester

In January, 2024, five mass media students formed a team to be in charge of the 2024 WIFI Film Festival. Throughout the semester, our team has been responsible for applying the theoretical knowledge we have learned in our mass media classes to the real-world by organizing and implementing the digital marketing and public relations activities. Together, we have managed

the festival's social media channels, created and implemented all the promotional materials for the festival, including videos, social media graphics, the festival program, and physical signage. Additionally, the team has supervised the panel of judges and the judging process, directed the student volunteers, and overseen the festival's external media relations. This presentation will discuss the activities each team member has had ownership of and the impact we have made on the Washburn and Topeka communities.

---

## *Session $\gamma$*

**Moderator: Jennifer Wagner**

---

► 2:00 p.m. – 2:20 p.m.

**Henderson Learning Resources Center, Room 207**

### ***Determining the Reproductive Demographics of Ornate Box Turtles (*Terrapene ornata*) via Ultrasonography Over Two Years***

**Keetan B. Munsell**

Mentor: Benjamin Reed, Biology

Estimating population growth is generally achieved by examining birth and death rates as well as immigration and emigration rates. For certain species, such as turtles, it can be extremely difficult to examine the birth rates without invasively monitoring female turtles as nesting observations are exceptionally rare to witness. In this study we utilized a non-invasive ultrasonographic procedure to monitor the reproductive ecology of 27 female ornate box turtles (*Terrapene ornata*) in Western Nebraska over a two-year period. Our project has enabled us to analyze the reproductive output of our sample of female box turtles which will help us better parameterize population growth models. Our ultrasound technique has also helped us characterize the egg development cycle of female box turtles at this study site. This study is important as it has made estimating individual fitness achievable, has helped us target specific turtles and habitat areas most important for conservation efforts, and demonstrates the high variability in female reproductive output between individuals and across years.

► 2:30 p.m. – 2:50 p.m.

**Henderson Learning Resources Center, Room 207**

### ***Development of Synthetic Atmospheric Ozone Profiles for Study of Supernova Effects on Climate Change***

**Alessandro Di Gregorio**

Mentor: Brian Thomas, Physics - Astronomy - Geology - Engineering

Supernova explosions produce radiation that causes changes in the ozone concentration and distribution in the atmosphere. So far, it has been found that the ozone presence perturbed by cosmic ray radiation has been lowered. Nonetheless, the gas is spread out more, and the main concentrations are at altitudes below the typical value we see today in our atmosphere. Overall, it appears more concentrated at the equator. Ozone plays a role in global climate and a recent study

using an intermediate-complexity global climate model (PlaSim) found a small increase in global temperature for a specific supernova case. To further investigate, we have adopted the program GNU Octave to develop a function that allows us to represent the ozone distribution changes over time and the identification of vertical and latitudinal profiles dependent on the O<sub>3</sub> concentration. The goal is to be able to create profiles for PlaSim so that climate effects can be investigated by independently modifying the variable height and latitude of ozone concentration. This will allow us to better understand how changes in ozone caused by supernova radiation affect climate.

---

## *Session* $\delta$

Moderator: Linsey Moddelmog

---

► 1:00 p.m. – 1:20 p.m.

Henderson Learning Resources Center, Room 307

### *A Fractured Constitution: Constructions of American Law in the Cold War*

**Kyle James Wolnik**

Mentor: Kerry Wynn, History

In the mid-1970s Seymour Hersh published a series of articles analyzing numerous offenses committed by the CIA, directly alleging that such acts broke the spirit of the National Security Act of 1947. Following this outbreak, various speculations filled newspapers carrying on into 1975, with the new year culminating in the establishment of the Rockefeller Commission. In addition to this presidential investigatory body, Congress set up their own investigations, exacerbating the scope of individuals who argue for more legislative controls, less legislative controls, hopefully increasing national security, or a paradoxical mixture of the two. Nevertheless, despite whichever method was taken, any legislative control was repeatedly bypassed resulting in more committees. Such committees added more voices to the discussion of whether such actions were right or wrong, thereby toeing the lines of Congressional or Executive power, essentially. In the end, though measures were passed or suggested, nothing seemed to be able to bridge the divide between the viewpoints. Therefore, legislative controls and executive action arguments were examined and exacerbated during the Cold War era, leaving a paradox still to be solved.

► 1:30 p.m. – 1:50 p.m.

Henderson Learning Resources Center, Room 307

### *The Link Between Democracy and Corruption in Latin America*

**Sierra Jeter**

Mentor: Linsey Moddelmog, Political Science

What is the correlation between corruption and democracy in Latin America? In a comparison between Latin American nations, do nations with more corruption have lower democratic ratings? This study attempts to answer these questions by using quantitative statistical analysis via the Pollux dataset about rural countries that only included Latin American countries.

Analyzing colonial history and international interactions with Latin America by other countries creates a foundational understanding of why democratization in Latin America is slow to develop and why variables like the severity of corruption and conflict have a direct correlation with democracy in the region. In this comparative analysis, the hypothesis is ultimately proven true. However, there are more questions that are raised than questions that are answered.

► 2:00 p.m. – 2:20 p.m.

Henderson Learning Resources Center, Room 307

### ***The Relationship Between Religiosity and Crime***

**Daniel J. Shaffer**

Mentor: Linsey Modellmog, Political Science

This presentation explores the relationship between religiosity within a state and crime rates in the United States. Assessing the relationship religiosity has with crime rates can be enlightening to the effect an individual's religion has on broader social and legal contexts. Data used in this study comes from the States dataset under SPSS statistics. This presentation utilizes a correlation matrix, linear regression models, and scatterplot graphs. These figures show states with a high percentage of individuals who identify as being highly-religious are significantly related to states with elevated crime rates, particularly murder and non-negligent manslaughter rates. However, I still maintain these results are not effects of causality. Rather, other factors which run adjacent to being highly religious such as poverty, contribute to crime, not religiosity in and of itself.

► 2:30 p.m. – 2:50 p.m.

Henderson Learning Resources Center, Room 307

### ***How Dupont Poisoned You***

**Michael Gallegos**

Mentor: Linsey Modellmog, Political Science

In the 1960s Dupont made Teflon, a non-stick pan that was a revolutionary product for its time. But what made it a non-stick pan is worrisome. To make something a non-stick pan you have to use certain chemicals to make it the way it is. During the production of the pan, some worrisome discoveries were made by the chemists. The workers who were helping produce these pans were getting sick with cancer and getting tumors. This discovery was kept a secret by the chemists and they continued the production of Teflon. The chemical that made this dangerous was a man-made chemical called, "PFOA." Over time PFOA builds up in your blood and can build cancer cells. Dupont knew what was going on but they kept it a secret. What is worse is that Dupont had a waste factory in West Virginia. This waste factory had PFOA. Dupont used to dump this toxic chemical into a run-off water that affected the Parkersburg, West Virginia water supply. Not only did it affect their water supply, but livestock were drinking it and it was inevitable that livestock were sold to be eaten. In 2024, it was confirmed that 99.9% of all living creatures have PFOA in their blood system. I will discuss the production, how PFOA was discovered, and the aftermath and the legal battle behind it.

---

# *Session 8*

Moderator: Pamela Schmidt

---

► 1:00 p.m. – 1:20 p.m. Henderson Learning Resources Center, Room 107

***Topeka Metro Bike Data Analysis, Part 1***

**Cole Warner and Andrew J. Schmidlein**

Mentor: Pamela Schmidt, School of Business

We will be presenting our findings when doing analysis on the data concerning Topeka Metro Bikes.

► 1:30 p.m. – 1:50 p.m. Henderson Learning Resources Center, Room 107

***Topeka Metro Bike Data Analysis, Part 2***

**Julian A. Zamora, Aditya Joshi, and Emily M. Reb**

Mentor: Pamela Schmidt, School of Business

We will be presenting our findings when doing analysis on the data concerning Topeka Metro Bikes.

► 2:00 p.m. – 2:20 p.m. Henderson Learning Resources Center, Room 107

***Unveiling Fraud in the Cannabis Industry: A Data Investigation on Legal States Cannabis Lab Testing, Part 1***

**Catherine Wools and Sumnima Limbu**

Mentor: Pamela Schmidt, School of Business

This project is in partnership with MK Analytics, a data analysis company based in Colorado. The scope of this project includes a nationwide analysis of cannabis data in states where recreational cannabis is legalized. Using data we have personally collected through the Freedom of Information Act (FOIA) on cannabis lab testing, we will analyze and compare lab testing trends and variance between states. Statistical analysis and data visualization will be used to find key performance indicators, detect patterns, and compare results on cannabinoid testing in multiple regions. The objectives of this project are to identify THC% inflation, inconsistent lab results, microbial contamination, and other unwanted contaminants. The insights gained from our analysis will highlight differences in state regulations and how they influence the results reported by labs, growers, and producers on both potency and non-potency lab testing results, and the possible opportunities for fraud that stem from these disparities.

► 2:30 p.m. – 2:50 p.m.

Henderson Learning Resources Center, Room 107

***Unveiling Fraud in the Cannabis Industry: A Data Investigation on Legal States Cannabis Lab Testing, Part 2***

**Devon Doherty, Brock Robert, and Blaire Baker**

Mentor: Pamela Schmidt, School of Business

This project is in partnership with MK Analytics, a data analysis company based in Colorado. The scope of this project includes a nationwide analysis of cannabis data in states where recreational cannabis is legalized. Using data we have personally collected through the Freedom of Information Act (FOIA) on cannabis lab testing, we will analyze and compare lab testing trends and variance between states. Statistical analysis and data visualization will be used to find key performance indicators, detect patterns, and compare results on cannabinoid testing in multiple regions. The objectives of this project are to identify THC% inflation, inconsistent lab results, microbial contamination, and other unwanted contaminants. The insights gained from our analysis will highlight differences in state regulations and how they influence the results reported by labs, growers, and producers on both potency and non-potency lab testing results, and the possible opportunities for fraud that stem from these disparities.

---

***Session ζ***

**Moderator: Zenova Williams**

---

► 1:00 p.m. – 1:20 p.m.

Henderson Learning Resources Center, Room 308

***Local History and Its Importance: A Reflection of My Time at the Kansas State Historical Society***

**Anna Rose Anderson**

Mentor: Jason Miller, Sociology & Anthropology

How does history affect underrepresented populations? How can further exploration of local history add to a richer understanding of Kansas? Through the LinC Bonner program, I was able to explore these questions. The program pairs up students with a service site, in my case the Kansas State Historical Society (KSHS). While at my service site, I researched and produced three nominations on historical Black building properties in Kansas. To wrap up my experience at KSHS, I worked with the archival team to photocopy Black history documentation and add brief descriptions of the items. After experiencing minimal records of Black history in Kansas, I wanted to make documents at KSHS more accessible to the public. This experience taught me much about local history and the importance of preservation of historic buildings to continue history. This presentation mainly focused on my capstone project but also tied in elements from my three years of service at KSHS.



► 1:30 p.m. – 1:50 p.m.

Henderson Learning Resources Center, Room 308

***Bonner & Poverty Studies Capstone - Loud Light & URGE***

**Chloe Ruth Chaffin**

Mentors: Kristine Hart, Learning in the Community (LinC); Jason Miller,  
Sociology & Anthropology; Kerry Wynn, History

WUmaster

Having joined the LinC Bonner program in the fall of 2020, my primary service site has been the Kansas-based, nonpartisan, nonprofit Loud Light which focuses on increasing civic engagement of young Kansans and voting rights for marginalized communities. I currently serve Loud Light as Program Lead, teaching three rotating yearly fellowships to educate my peers on the basics of the state legislature, community organizing, and voter registration and GOTV efforts. Through coalition work with Loud Light, I also connected with URGE (Unite for Reproductive and Gender Equity) in the summer of 2021 and have since launched and led a chapter of Washburn URGE. Washburn URGE has since done advocacy work on the August 2, 2022 constitutional amendment vote no campaign, sustained a Free Period campus campaign, and much education on queer and sex education. In November of 2022, I joined the national URGE board of directors and have served ever since.

► 2:00 p.m. – 2:20 p.m.

Henderson Learning Resources Center, Room 308

***Breaking Free from the Gridlock! Enhanced Efficiency and Efficacy  
in the Emergency Department***

**Randy Gogel**

Mentor: Tracy Routsong, Integrated Studies

WUmaster

Patient satisfaction decreases as wait time increases, which impacts the overall health outcome (NRC Health, 2022). Patients who were using services were found to have a primary complaint over the length of time they had to wait in the emergency room for a provider, according to data obtained from a local hospital. Based upon the hospital's ER statistics, as well as data obtained from observations and data from online sources, strategies and interventions were reviewed and assessed for local implementation.

► 2:30 p.m. – 2:50 p.m.

Henderson Learning Resources Center, Room 308

***Healthcare Around the World: Comparing Systems and Mental  
Health Coverage***

**Desiree Cain**

Mentor: Angela Duncan, Psychology

I will be talking about the different models in the healthcare systems. This includes the Bismarck model, Beveridge model, national health insurance model, and the uninsured/out of pocket model. I will be explaining where those models are the most practiced and magnifying areas like

Canada, Spain, France, and Madagascar to compare to how the United States identifies healthcare. Then I will be taking a more psychological approach by explaining how each country deals with mental health. Do they offer therapy as part of a healthcare treatment? How do the countries approach mental health? The models are universal, however, each country still does different things within their administration so I would like to figure out how each system implements each model.

# Poster Presentations

3:50 p.m. – 5:00 p.m.

*Memorial Union, Washburn A*

*Poster Session 1 (odd-numbered posters): 3:50 p.m. – 4:25 p.m.*

*Poster Session 2 (even-numbered posters): 4:25 p.m. – 5:00 p.m.*

*WU*mester denotes WUmester topic

*WTE* denotes Washburn Transformational Experience

**1**

## ***Assessing the Relationship Between Adverse Childhood Experiences and Academic Outcomes***

**Brittany Campos**

Mentor: Tucker Jones, Psychology

*WTE*

The proposed study aims to further assess the areas in which Adverse Childhood Experiences (ACEs) affect the subjective experiences (e.g., academic achievement, GPA, campus involvement, Sense of Belonging) of college students. Previous research has demonstrated that ACEs have been repeatedly associated with a wide range of mental health issues in college students. In one study, it was found that 39% of college students reported at least one ACE, and students with histories of ACEs were more likely to report symptoms of psychological distress than those with no histories of ACEs (Karatekin & Ahluwalia, 2020). Despite current findings on ACEs showing that having more ACEs is associated with a number of problematic outcomes (e.g., increased risk of chronic disease, increased risk of engaging in risky behaviors, increased risk of having mental health concerns; CDC, 2014), there is a lack of research on the relationship between ACEs and student's academic outcomes. Indeed, by better understanding how ACEs may be likely to impact students' experiences, we may be able to use this information to develop programs to make sure that students who have relatively more ACEs have the support they need to be successful in college.

**2**

## ***Providing Basic Needs to Students***

**Brittany Campos**

Mentor: Jason Miller, Sociology & Anthropology

*WTE*

Being involved in LinC Bonner provided me with the opportunity to work with Communities in Schools over at Ross Elementary. I started my freshman year and finished my service there in the fall of 2023. I completed a total of 1,000 and more and gained so much knowledge on how it is to volunteer at schools and provide students with basic needs. I had the opportunity to translate for Spanish-speaking families and assist the school with food donations back when the pandemic was occurring. It was a wonderful experience, and I am now working at Bods Feeding Bods for both an internship class and a Bonner Capstone project. I am still providing basic needs for students, and for my project, I am hoping to create a website that will provide more information

and resources for the students. On the day of Apeiron, I am hoping to present information on my experience as a Bonner and how I was able to give back to my community.

### 3

#### ***Increasing Acute Healthcare Knowledge in the Rural Setting***

**Samuel C. Moore**

Mentor: Erinn Howard, School of Nursing

WTE

This research article explores the many ways that can help improve health or healthcare literacy in the rural setting. The rural setting is unique because it has many different variables that pose a significant challenge in terms of access to quality knowledge of health. This paper will also address the acute healthcare crisis that people are experiencing across the United States. Furthermore, it will explore the acute healthcare model in the rural and urban settings and see how they play into the healthcare system. The ways that can increase healthcare knowledge will be laid out. It will also look at the integration into schools via various ways like in the classroom or in extracurricular activities. Integration into the community of healthcare knowledge will also be explored and the ways it can be implemented.

### 4

#### ***Linking Social Determinants of Health and Trauma-Informed Care***

**Courtney Wohletz**

Mentor: Erinn Howard, School of Nursing

WTE

Social determinants of health, defined as a variety of social and economic factors that affect physical health, when connected with trauma-informed care, healthcare informed by past traumatic experiences that recognizes their effects on current care, can provide the opportunity to treat a patient holistically, as the healthcare provider incorporates past and current data of a patients' medical history, other than only their physical health. These two topics are also influenced by Adverse Childhood Experiences, incidents of household dysfunction and abuse that occur during childhood, that have been shown to affect adult physical health. Although linking these topics could prove to be influential in providing patient-centered care, a literature gap exists between the two. Through a thorough literature review, this paper describes each of these areas of study and links them together to provide future healthcare providers the information needed to provide all-inclusive care for patients and understand their background. Appreciating the effects of trauma and traumatic experiences on an individual's overall health can provide background data needed to create a plan of care vital for positive health outcomes.

## 5

### ***Delivery of Patient Education***

**Jessamyn L. Keller**

Mentor: Michelle Heusi, School of Nursing

WTE

Acute cardiovascular events such as myocardial infarctions, pulmonary emboli, and strokes, are largely preventable yet they remain prominent within the U.S. population (Centers for Disease Control and Prevention [CDC], 2023). While many factors influence the incidence of these conditions, education is one of the first steps in minimizing their occurrence. It promotes active patient participation and allows the patient to advocate for themselves and understand their treatment. Unfortunately, many barriers exist regarding the delivery of education and enhancing patient understanding of their disease and treatment. Lack of knowledge (Nikasadat et al., 2022) and poor delivery of education (Mentrup et al., 2020) can all contribute to a person's poor understanding of their condition and treatment regimen. Moreover, recent increases in staff turnover rates (Hooper, 2023) make it more difficult for nurses to prioritize less urgent tasks such as education. There are several resources and concepts available to enhance a person's knowledge of disease processes and the related interventions. Patient education promotes self-management of their disease, prevents further decline, and recognizes the individuality of a person as a patient. It is the foundation of quality and safety in preventative healthcare.

## 6

### ***How Memory Works in Dancing***

**Shelbie Bennett**

Mentor: Dave Provorse, Psychology

WTE

I wanted to take a look into how dancing can affect the memory. Muscle memory is a huge component in dancing; it is part of the reason we can do so many dances in one day. Being a competitive dancer for twenty years I have first hand experience in this. With my own knowledge, I wanted to dig even deeper into memory and dance.

## 7

### ***Reclamation Clubhouse Internship***

**Levi S. Sieben**

Mentor: James Schnoebelen, Communication Studies

WTE

This project will highlight the different experiences from my internship at Reclamation Clubhouse. I will also present the different communication observations I made during my internship and what I learned from the experience.

## 8

### ***Building Bridges: Paving the Way to Understanding***

**Jon M. Cloud, Logan C. Dunn, Dana Grame, and William Booth**

Mentor: Tracy Routsong, Integrated Studies

WUmester WTE

Working within a diverse world, it is important to understand the complexity of the human experience. Using a series of educational modules designed to assist in the comprehension of perceptual differences, each person reflected upon the topic within their own academic experience, as well as their future endeavors.

## 9

### ***Sense of Belonging and Acceptance Among BIS Students***

**Ethan Schmitz**

Mentor: Tracy Routsong, Integrated Studies

WUmester WTE

The purpose of this project is to gather information from BIS students. I want to find out how they came across the BIS major and why they chose this field of study. I believe that this field of study is not super well known and I want to figure out why that is. I want to see if students think that this major is not promoted well enough or if there are other reasons it is not super well known. I also want to see how this major has helped them grow as a person and connected them to their future career paths. When I became a BIS student I was lost and did not know what major I wanted to study, and I am curious if something similar happened to other people. I finally want to get people's thoughts overall on the BIS major and how they feel about it. Doing this research and finding out the results will tell us if the BIS program is well known and could possibly help it grow in the future and be more well known.

## 10

### ***Cellulose in Your Kombucha? Isolation and Identification of a Cellulose Producing Bacterium in Kombucha***

**Mary G. Tyler and Desi N. Thimesch**

Mentor: Susan Bjerke, Biology

Kombucha is a fermented tea drink that is touted for its health benefits. Numerous bacteria and yeast ferment the sugar in the drink and produce carbonation and acidity. We investigated microbes found in small-batch, locally produced craft kombucha. While isolating the microbes, one bacterium produced a gelatin-like substance, exhibiting characteristics that are similar to the SCOBY that is formed during kombucha fermentation. Previous research has shown that some bacteria in kombucha produce cellulose. They do this to get closer to the surface of the culture to access oxygen for respiration and help them retain moisture. Bacterial cellulose has different properties than plant cellulose and is being studied for its roles in biomedicine and industry. We observed beads, a ribbon-like structure and rubbery cellulose production based on the type of growth media and addition of shaking to the culture. Multiple assays were performed to show that the substance was cellulose: a cellulase assay, cellulose fluorescent dye test, and Fourier

transform infrared spectroscopy. In addition, the physical characteristics of the bacteria indicate that it is likely from the species *Komagataeibacter*. Future directions include purifying DNA from the bacteria to obtain a sequence and investigating conditions that increase the production of the cellulose in culture.

## 11

### ***Assessing Perceptions of People For or Against Self-disclosing Pronouns***

**Payton M. Rice**

Mentor: Tucker Jones, Psychology

WTE

Prior research has shown that affirming one's gender through pronoun usage is beneficial to mental health outcomes. As such, universities and other professional settings have been at the forefront of including pronouns wherever possible. Given these changes, more research is needed to assess the extent to which other individuals agree that pronoun usage is needed. Studies have been done to assess general perception of trans-diverse individuals, but there remains little research on how perception of individuals change due to association with pronouns. The proposed study seeks to understand how observers are likely to perceive those who express their support for (or in disagreement with) self-disclosing preferred pronouns in a real-world setting.

## 12

### ***Exploring Gender Dynamics: Self-Esteem, Body Self-Relations, and Sleep Quality in College Students***

**Kayla M. Beyer**

Mentor: Angela Duncan, Psychology

Past research has shown that there is a relationship between sleep and academic performance (Al Salmani et al., 2020; Estevan et al., 2021; Gilbert & Weaver, 2010; Gomes et al., 2011; Suardiaz-Muro et al., 2023). Additionally, research has suggested that females are more likely to experience sleep disorders and are more likely to have impacted academic performance when experiencing poor sleep than males (Al Salmani et al., 2020; Gaultney, 2010; Gilbert & Weaver, 2010; Peters et al., 2005; Wu et al., 2022). There is a literature gap in research investigating why this may occur. This study is investigating the complex relationships among gender, self-esteem, body self-relations, and sleep quality among college students. The aim is to understand how these factors interrelate and potentially influence each other. Data will be collected from a sample of Washburn University students enrolled in psychology courses, using questionnaires assessing sleep quality, self-esteem, body self-relations, and academic performance. While complete data collection and analysis are ongoing, it is hypothesized there will be correlations between gender, sleep quality, self-esteem, body self-relations, and academic performance. This study will highlight the importance of addressing sleep quality, self-esteem, and body self-relations in promoting academic success among college students. It will also provide a foundation for further investigation into these relationships.

## 13

### ***Does Disclosure of Gender Identity Influence Perceptions of Neuro Divergent Individuals?***

**Nicole Malinverni**

Mentor: Tucker Jones, Psychology

WTE

Qualities such as neurodivergency and queerness have been shown to have effects on how people are perceived by others. Although research has often looked at how these identities may individually influence other people's perceptions (e.g., Koenig & Eagly, 2014; Boer & Pijl, 2016), there is a gap in the literature when it comes to how these two identities may interact to influence the perceptions of others. This study aims to understand the relationship between gender identity and neurodiversity when it comes to peer perceptions. More specifically, the proposed study will assess the potential interaction among these variables to determine if the combination of such identities will significantly impact peer perceptions.

## 14

### ***Psychopathic Traits in University Students and Their Relationship to the Five Factor Model of Personality and Engagement in College***

**Kylar Slapar**

Mentor: Julie Boydston, Psychology

WTE

Personality disorders characterized by psychopathic traits can be predictors of future criminality in individuals, and as previous research has found, there is a higher prevalence of psychopathy in university students than among people in the community (Sanz-García, et al., 2021; Sirca & Billen, 2024), which may be an indicator for engagement in a university setting. This study looked at the relationships between psychopathy, the Big 5 personality traits, and engagement in college. It also examined the personalities of different majors. This was done by using the Self-Report Psychopathic Scale (SRP III), the Big Five Inventory, and the University Student Engagement Inventory. With this study, it was predicated that psychopathic traits would be related to personality factors. In addition, it was predicted that higher scores on psychopathic traits would be related to lower scores of student engagement and be more highly related to non-helping careers and majors. So far, as this is an ongoing study, thirty-seven participants have completed the questionnaires. Participants were recruited through surveys in Introduction to Psychology classes and fliers around campus. Results produced from this study may lead to future research which could help certain students if they are struggling with engagement in school or anti-social behavior and choice of a major or career focus.



## 15

### *The Dark Veil: A Young Adult Novel*

**Isabelle T. Pryor**

Mentor: Liz Derrington, English

WTE

When I was 18, I wrote a novel. A lot can happen in four years, and this semester I discovered just how much those years have changed me as a writer. I undertook a full revision of my freshman novel, and throughout the redrafting, line editing, and copy-editing process, I rediscovered my love for the art that is creating a story. Beyond writing and editing, I've taken a dive into the publishing world. I have learned how to design cover art for my book and to properly format and type-set it for printing. This experience will be invaluable if I decide to self-publish. I have also written cover letters and query letters, prepared samples of my book, and sent them to traditional publishing agents. This process has not only rekindled my love for books, it has taught me the importance of constant self-improvement. Self-editing and taking notes from my WTE mentor and my beta reader have taught me that imperfection is part of the process.

## 16

### *Exploring Opportunities to Improve Health Services Post-COVID 19 Pandemic For Students Attending a Northeast Kansas University*

**Erin Middendorf, Brianna C. Lee, and Ashley McCune**

Mentor: Amanda Hartman, School of Nursing

Many college students suffer from mental and social health concerns. Research shows that the impact of the COVID-19 pandemic has affected the mental and social health of college students. College health centers (CHC) may not be well-equipped to appropriately screen and treat patients following the COVID-19 pandemic. The purpose of this quality improvement project was to work with providers at a CHC to improve mental and social health care screening and treatment services for college students impacted by COVID-19.

## 17

### *An Internship at Washburn: Spirit Squad Edition*

**Zoey Adrianna Blissett**

Mentor: James Schnoebelen, Communication Studies

WTE

I am currently an intern in the Student Life office, specifically working with the Spirit Squad (Dancing Blues, Mascot, Cheer Squad), Bod Squad, and future Washburn Homecoming events and traditions. I work underneath Eric Grospitch and Tia Benyshek. I have overseen all Washburn Cheer events, games, and social media accounts (Facebook, Instagram, TikTok). I assist in PR, internal and external communications, as well as outreach with the entire spirit squad program. Additionally, this role has allowed me to hold a position in the Bod Squad committee, which is in formation this year!

## 18

### *Analysis of Humor*

Jayden Payne

Mentor: Tracy Routsong, Integrated Studies

WUmester

In my presentation I will be analyzing a film and showing you certain parts of a film that relate to content I have learned through my semesters here at Washburn. I plan on watching a film and analyzing it based on the Psychology of Humor class I have taken. I have taken many film classes through the semesters, and I have a good understanding of what to look for. I will be watching the film and chiming in as it plays to explain things like why people find this funny or certain effect in the movie on why they did what they did based on what I have learned in my film classes and my psychology of humor class.

## 19

### *Solid Organ Transplantation (SOT) in the United States: Potential Donor and Recipient Barriers*

Sophia R. Taylor

Mentor: Sue Unruh, School of Nursing

What began as an experimental procedure has proven to be a life-saving measure for many individuals who experience end-stage organ failure. The first successful human solid organ transplant (SOT) was performed in the mid-1950s. Approximately 840,000 transplants have been completed in the United States since the government began keeping records in 1988 (UNOS, 2024). Although significant advancements have been made in surgical techniques, follow-up care, quality of life, and prolonged life expectancy, a shortage of available organs continues to limit the number of potential transplantations. Currently, more than 100,000 individuals remain on the national transplant waiting list each year (HRSA, 2024). Numerous barriers that are potentially limiting an increase in organ donations and SOTs in this country have been identified among organ donors and recipient populations. National efforts to increase solid organ donations, improve allocation systems, and address recipients' reluctance to pursue transplantation will require a multifaceted approach. Data collection initiatives and legal clarifications will also be necessary to address known barriers.

## 20

### *Broken Bonds, Fragmented Hearts: The Impact of Divorce on Adolescent Romantic Relationships*

Sheyenne S. Cheek

Mentor: Tucker Jones, Psychology

WTE

Divorce can have a lasting impact on adolescents, influencing not only their current romantic pursuits but also their future ones. Adolescents are likely to learn about intimacy, trust, and commitment from their parents. However, witnessing their parents' divorces can impact such lessons. The goal of my literature review is to investigate the complex effects of divorce on

adolescent romantic relationships. In addition, I aim to shed light on the wider psychological effects of divorce on adolescents. The existing literature on the impact of divorce on children and adolescents highlights several gaps that future research could address. For example, additional research using more longitudinal research methods is needed to track the effects of parental conflict as adolescents transition into adulthood. There is also a need for more research on how parental conflict impacts different populations. By addressing these gaps, future research can provide a more nuanced understanding of the complexities of parental conflict and inform more effective interventions and support services for families experiencing divorce.

## 21

### ***Types of Crisis Services and Various Outcomes for Children and Families***

**Kayla L. Willey**

Mentor: Julie Boydston, Psychology

WTE

My presentation will be on my internship at the Family Services and Guidance Center in the Youth Crisis and Recovery Center. Some of the skills I will discuss that I have gained from my internship include flexibility to the changing environment, critical thinking skills used in this line of work, deescalating children, creating and writing billing/notes for each client, problem solving skills, emotion regulation methods used for children, and understanding how to approach each child and their difficulties differently. I will also discuss how this internship has affected my future career aspirations. My poster will describe the different types of crisis services that are available to children, including mobile crisis services available, in-home crisis services, out-patient crisis services, and in-patient services. Using at least 10 different research articles, I will discuss how these types of crisis services can impact the children and families who utilize these services. These services show a positive promise of having more availability for those who need it. By having different types of crisis services available, the positive impact will increase immensely. The validation given from the research articles I have found will show a great deal of evidence as to how important crisis services are to various communities.

## 22

### ***Topeka Metro Bike Data Analysis***

**Julian A. Zamora, Cole Warner, Aditya Joshi, Andrew J. Schmidlein, and**

**Emily M. Reb**

Mentor: Pamela Schmidt, School of Business

We will be presenting our findings when doing analysis on the data concerning Topeka Metro Bikes.

## 23

### *Factors Affecting Metabolic Rate in Two Populations of Ornate Box Turtles*

Jadelynn M. Vopat and Emma Jo Nelson

Mentor: Tracy Wagner, Biology

Metabolism is the sum of all chemical reactions occurring in an organism's body. The metabolic rate corresponds to how fast these chemical reactions are occurring. The more an organism moves, the more energy is required, which means more chemical reactions will happen. Other factors that can impact metabolic rate include diet, size, and sex. We wanted to compare metabolic trends in ornate box turtles (*Terrapene ornata*) from two locations: North Topeka (NT) and Cedar Point (CPBS). Because the geography and weather differ between the two locations, this affects the physical challenges to the turtles' movement and food resources. The objective was to see if the different locations' physical geography and weather would result in different metabolic trends between the two populations. To accomplish this, we used a metabolic chamber and program to measure the percent changes in oxygen (O<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>). The test was stopped when there was at least a one percent increase in CO<sub>2</sub> levels. Data show rain averages are lower for CPBS than in Topeka. This means we would expect a greater amount and variation of nutrition is possible for NT turtles which would enhance metabolic activity. However, metabolic rate, as indicated by oxygen consumption per gram of turtle mass, was higher for CPBS turtles (0.082 mls/O<sub>2</sub>/hr/g) than for NT turtles (0.076 mls O<sub>2</sub>/hr/g) during the summer of 2023. Further analysis should help us determine other factors that have impacted the results.

## 24

### *Adverse Childhood Experiences from the LGBTQ+ Perspective*

Adrienne R. Davidson

Mentor: Linzi Gibson, Psychology

WUmaster WTE

During the years of studying Adverse Childhood Experiences, researchers have come to understand that these experiences impede individuals' sense of belonging and rate of self-disclosure. Several studies have repeatedly called attention to the immensely higher rates of Adverse Childhood Experiences in the LGBTQ+ community, yet literature gaps still exist. My study shed light on specific literature gaps in sense of belonging and rate of self-disclosure using surveys personalized for LGBTQ+ participants in order to directly hear from them about their experiences with experiences unique to LGBTQ+ individuals rather than a "one size fits all" approach.

## 25

### ***Student Perceptions of Interaction Between American Universities and International Students***

**Marco Flores**

Mentor: Carson Kay, Communication Studies

WU~~m~~ester WTE

This pilot study seeks to investigate and analyze the communication interaction that fosters organizational identification between universities and international students. By focusing on communication between universities and international students, this study provides the communication research field with valuable insights into how intercultural communication takes place within academic environments. Also, the study will give international students an opportunity to share how their organization's identity and culture are constructed, communicated, and perceived by international students. In addition, by aiming to improve the relationship between universities and international students, this project may provide baseline information for policy and practice within educational institutions. This project will provide evidence-based recommendations on how universities can strengthen their communication strategies to better support and welcome international students. Participants will be a snowball sample of individuals recruited through social media announcements on the research member's accounts, appropriate email listservs, and emails to campus groups and individuals.

## 26

### ***Big Problems, Small Groups: An Instructional Communication Study***

**Cade Blenden and Vanessa Guzman-Slater**

Mentor: Adebanye Adebayo, Communication Studies

WU~~m~~ester WTE

COVID-19 has rendered challenges for small-group learning, harming knowledge co-construction, collaboration and group interactions (Song & Elftman 2024). Using Rhetorical and Relational Goals Theory (RRGT), this study seeks to explore potential differences between “high-instruction” and “low-instruction” learning outcomes, informed by fulfillment, or lack thereof, of multiple ‘conditions’ for effectiveness in the classroom. Thus, this study will (1) engage and understand the nature of small-group learning, and its interactions with RRGT and (2) study—in the classroom(s)—how these different teaching methods are received in their most natural modes of communication, observations (Beebe & Mottet, 2009). Proposed outcomes and recommendations regarding best teaching method and small group instructions will be highlighted.

27

***On the Field and In the Classroom: The Balance of Academics and Athletics in Student Athletes***

**Weston J. Ropp, Olivia Fieger, and Jarmell Jawaun Johnson**

Mentor: Adebanke Adebayo, Communication Studies

WUmaster WTE

Studies have shown that student athletes struggle to balance academic responsibilities with athletic commitments due to a variety of factors (Karagiorgakis & Blaker, 2021; Rankin et. al., 2016; Miles, 2015). Using the Social Support Theory and the Effort-Reward Imbalance Model, this study will examine stress, time management, and campus climate to gain a better understanding of these aspects' impact on student athletes' academic success within their first athletic semester. To do so, college athletes will be recruited to complete a survey involving questions that address each of the previously listed components. Proposed findings and recommendations will be discussed. Key Concepts: Campus Climate, Effort-Reward Imbalance Model, Social Support Theory, Stress, Time Management

28

***Exploring the Relationship between Environmental Factors and Code-Switching Patterns***

**Paola Alcorchas-Gomez and Stephanie M. Vannetti**

Mentor: Adebanke Adebayo, Communication Studies

WUmaster WTE

Bilingual speakers struggle with what is considered “authentic forms” of communication when interacting in different contexts. Using Communication Accommodation Theory (CAT), this study seeks to examine the influences of environmental factors on the frequency and pattern of code-switching among bilingual individuals. The motivation to address the question arises from the potential impact on cultural understanding, identity, education, cognitive science, and effective communication. A qualitative approach will be used as a methodological framework for this study. The proposed findings from this study can have implications for contributing to a broader understanding of the dynamics of bilingualism in diverse linguistic environments. Keywords: Bilingualism, Code-Switching, Communication Accommodation Theory, Language Patterns.

29

***Comparing the Behaviors of Different Social Classes Within and Across Three Felidae Species***

**Shianne Paden**

Mentor: Tracy Routsong, Integrated Studies

WTE

Even though species may be closely related, like those within the family Felidae, their behaviors may be drastically different. Understanding how behaviors may differ between closely related groups is important, especially for species that are regularly kept at zoos and other educational

facilities where identical enclosure design may not be optimal for any individual species. For this project I generated an ethogram for three Felidae (African lion, mountain lion, Sumatran Tiger) species that are on exhibit at the Topeka Zoo and Conservation Center. Each week for 8 to 9 weeks, I recorded the specific behaviors and space-use of the female mountain lion, the male and female African lions, and the male and female Sumatran tigers. The behaviors and locations for each Felidae were recorded every 30 seconds for an hour. The behaviors and locations between the different social classes, alone, together, and mostly alone are compared. The behaviors and locations between genders within the different social classes are also compared. The data gathered here can help inform zoologists in designing optimal habitats for each species and individual therein.

## 30

### ***Assessment in Action: Interventions by School Psychologists in Primary School Settings***

**McKenzie Jo McMahon**

Mentor: Julie Boydston, Psychology

WTE

For my project, I am completing a 150-hour internship. My sites consist of two elementary schools, one within Topeka's district and one within Seaman's district. At each location I follow a school psychologist and observe a typical day on the job. My experience is comprised of observing meetings, evaluations, assessments, tests, counseling sessions, and so forth. During my internship, I obtained a variety of duties and responsibilities. In addition to my duties and responsibilities, I have acquired an assortment of skills and consumed an abundant amount of information such as scholarly articles related to the field of school psychology. This internship has also challenged my career aspirations and exposed me to other fields of interest!

## 31

### ***Senior Capstone Internship: Butler and Associates, PA***

**Kya Tenbrink**

Mentor: James Schnoebelen, Communication Studies

WTE

Within my presentation, I will discuss what I had learned during my internship experience. Here I will discuss what I learned, as well as how my internship was connected to communication studies, the communication terms or observations that I found were utilized while at my internship, and how the internship went.

## 32

### ***Ornate Box Turtles (*Terrapene ornate*): Defying the Expectations of Brumation Cohabitation***

**Christopher Timothy Preister and Brookelynn N. Powell**

Mentor: Benjamin Reed, Biology

Investigating the sociality of a species, population, or even the individual can be important for understanding the various selective pressures that a group faces. Social animals may benefit from living in groups by having increased protection from predators, more animals looking for resources, and increased specialization within the group. Costs of sociality often include increased resource needs, increased visibility to predators, and increased disease and parasite transmission. While most species are known to be social or asocial, there is a need to further document the sociality in some lesser-studied taxonomic groups, including chelonians. Traditionally, many chelonians, such as our study species (the ornate box turtle, *Terrapene ornata*) are widely considered asocial. However, we have observed over several seasons contradictory evidence to the notion that ornate box turtle is mostly asocial. In this study, we document and compare cohabitation rates across two separate populations of ornate box turtles over several years. This study is important as it broadens our understanding of sociality within an ectotherm group typically ascribed as being non-social. Furthermore, documenting sociality in box turtles may be informative for more accurately modeling disease and parasite spread, including ranavirus, which is a well-known cause of mortality in this species.

## 33

### ***The Role of School Psychologists: Navigating the Education System to Benefit Children***

**Chelsea N. John**

Mentor: Julie Boydston, Psychology

WTE

I am doing a 150-hour internship with a school psychologist in Topeka at two different elementary schools. During my internship I have obtained knowledge concerning the school psychology field. I have observed my supervisor conduct assessments, implement interventions, write IEPs, and more. I have been able to assist and conduct my own classroom observations. I have sat in on IEP and GEI meetings and observed my supervisor help with behavioral de-escalation. I have learned ways to keep kids focused during assessment and ways to motivate the kids to want to get them done. I have learned ways to step in and help during de-escalation and ways to analyze data collected during assessments. My internship has helped me decide that I want to go into the field of school psychology which was something I was unsure about previous to its start. Alongside my internship I have been researching the field and collecting ten scholarly articles that discuss the field and its importance. I believe that the field of school psychology is fundamental and more people should learn about its importance.



## 34

### ***Enhancing Child and Family Well-being: The Multifaceted Benefits of Respite Care Programs***

**Lauren Slusser**

Mentor: Julie Boydston, Psychology

WTE

This presentation is going to be about respite care programs and the benefits it provides for children who are struggling with behavioral issues at home as well as mental illness. It will be focused on how respite care provides a break from the family for the child, and the family a break from the child. This presentation is going to be backed by scholarly articles and research done at a facility (FSGC) that uses respite care programs.

## 35

### ***Conquering the Body with the Mind***

**Madelyn Hutley**

Mentor: Julie Boydston, Psychology

WUmaster WTE

I completed my internship with the Washburn strength and conditioning coaches and athletes. During my time in the athletic weight room at Washburn, I learned many skills some being, how to make workout programs, how to interact with athletes and colleagues, and ways to motivate the athletes. I also observed changes in athlete performance due to factors such as alcohol, menstruation, lack of sleep, and heightened levels of stress. I acquired research regarding many of the things discussed above all relating to sport psychology and athletic performance. After working with the Washburn coaches and athletes, I have decided to pursue further schooling. I'm hoping to master in Kinesiology with an emphasis on exercise behavioral science and to become a strength and conditioning coach at the college level.

## 36

### ***Micro Fabry-Perot Cavity for Characterizations of Nanoscale Particles in Liquid Phase***

**Girish Paudyal**

Mentor: Hoang Nguyen, Chemistry

WTE

A micro Fabry-Perot cavity is an optical device capable of amplifying optical signal from nanoparticles for physical and chemical characterizations. This optical device consists of two high-reflectivity mirrors positioned micrometers apart. The resonance condition of the cavity is finely tuned by fixing one mirror and moving the other one precisely using a shear piezo. The on-resonant optical signal emitted or scattered by the nanoscale particles inside the cavity will be enhanced and then detected by a spectrometer to quantify their physical properties and identify their chemical compositions. This quantitative method is non-destructive and thus can be used to study a variety of nanoscale structures, from quantum dots to molecular assemblies. We are currently working on the introduction of UV light to this cavity to excite quantum dots to collect their emission spectrum. We are expecting a 100-time enhancement for infrared emission and a

few-tens-time enhancement for visible light inside the microcavity. Additionally, we are working on revising our optical setup to accommodate liquid-phase samples.

**37**

***Building Belonging: How Diversity Specific Spaces Impact  
Campus Climate***

**Vanessa Guzman-Slater**

Mentor: James Schnoebelen, Communication Studies

WUmaster WTE

This presentation is a reflection of my senior capstone internship with the Multicultural Intersectional Learning Space at Washburn University and how diversity specific spaces positively impact student to student interaction, retention, and campus involvement.

**38**

***The Need to Achieve: Examining the Fear of Failure through the  
Lens of Higher Education***

**Lily Claire Thompson**

Mentor: Michael McGuire, Psychology

WTE

The fear of failure occurs when an individual believes in inhibiting all behaviors that could lead toward an undesirable outcome. Career development, academic performance, and sociability are domains often found in higher education practices, all significantly impacted when dealing with this fear. In conducting a literature review, I further investigated the fear of failure and its psychological influence on undergraduate students. Topics included defining the fear of failure, recognizing the association with the fear of failure and aspects of higher education, and opportunities to positively combat this psychological barrier. Each of the areas encompassed an in-depth perspective supported by quantitative and qualitative pieces of empirical evidence. Insightful conclusions helped achieve valuable learning outcomes, especially those applicable to my future career aspirations found in Higher Education and Student Affairs.

**39**

***Unveiling Fraud in the Cannabis Industry: A Data Investigation on Legal  
States Cannabis Lab Testing***

**Devon Doherty, Catherine Wools, Brock Robert, and Sumnima Limbu**

Mentor: Pamela Schmidt, School of Business

WTE

This project is in partnership with MK Analytics, a data analysis company based in Colorado. The scope of this project includes a nationwide analysis of cannabis data in states where recreational cannabis is legalized. Using data we have personally collected through the Freedom of Information Act (FOIA) on cannabis lab testing, we will analyze and compare lab testing trends and variance between states. Statistical analysis and data visualization will be used to find

key performance indicators, detect patterns, and compare results on cannabinoid testing in multiple regions. The objectives of this project are to identify THC% inflation, inconsistent lab results, microbial contamination, and other unwanted contaminants. The insights gained from our analysis will highlight differences in state regulations and how they influence the results reported by labs, growers, and producers on both potency and non-potency lab testing results, and the possible opportunities for fraud that stem from these disparities.

## 40

### ***Curating Curtis: Creating a Place for Community***

**Oshara Hayes**

Mentor: Tracy Routsong, Integrated Studies

June 22nd will be the grand opening for the Lois Curtis Campus Resource Center. For my project, I am designing an entry space scene for the opening day. This includes building the frames, placards, and conceptualizing the space to best depict not only Lois Curtis but the case (Olmstead v L.C., 527 US 581) that forever changed the lives of those with disabilities and other marginalized populations.

## 41

### ***The Psychology of Exercise and Personal Training***

**Kameron Lake**

Mentor: Tracy Routsong, Integrated Studies

The topic of this project is focused on the profession of personal training and how communication studies and psychological practices are related to this field. Within this presentation I will be sharing my experiences as a personal trainer during my recent internship and how I have used the knowledge I have gained from my educational experience in communication studies and psychology to improve my abilities as a personal trainer. In addition to this I will be sharing specific examples of communication and psychological concepts and experiments that have been conducted and how I used this information in my own experiences. Some of the concepts that I will be covering are the psychology of motivation, hormones, and the neuromuscular system, along with the transtheoretical model of communication and specific communication techniques.

## 42

### ***My Internship with the Student Life Office***

**Liz Duvall**

Mentor: James Schnobelen, Communication Studies

This poster presentation highlights the Student Life Intern position, focusing on the goals of developing communication strategies for campus/community safety, online safety, student engagement, and homecoming events. Utilizing Social Identity Theory and Group

Communication theories, this position aims to create a sense of belonging and safety within the student body. By implementing these theories into practical strategies, I have worked to foster a more inclusive and engaged campus community. The poster will showcase the successful outcomes and the impact of utilizing these theories in a real-world setting.

## 43

### ***The Power of Coaching***

**Dylan Gilbert**

Mentor: Tracy Routsong, Integrated Studies

My project is going to be about how coaches in all levels can be impactful and monitor for kids. I have been studying the show "Friday Night Lights" by breaking down the film and on my poster you will see the different traits and characteristics from the film about how coaches make an impact in the world for kids who do not have a good understanding what is that like to have someone to look up to. I will have categories set up on my poster about the three different coaching styles from the three different seasons of the show from 1, 3, 5 with examples on them I saw in the show "Friday Night Lights". Then I will prepare and we will see out of the three different types of coaching styles which one is the best suited coach and mentor that would be best for the kids.

## 44

### ***Factors for Creating Inclusive Higher Education for Retaining Diverse Student Populations: A Literature Review***

**Pat Moore**

Mentor: Michael McGuire, Psychology

Sustaining the retention of diverse students in higher education demands a varied approach that integrates support systems, inclusive campus environments, culturally responsive pedagogies, and equitable access to resources and opportunities. This integration creates a sense of community and fosters personal growth among various student populations, ultimately increasing the likelihood of persistence and success in their college careers. Examining the transition from high school to college and identifying factors that influence enrollment and persistence can address the critical question of student empowerment. Psychologists' growing interest in multicultural psychology has led higher education institutions to enhance their strategies for retaining and supporting students from diverse backgrounds, with the goal of advancing education and meeting the expectations of those from lower socioeconomic backgrounds.

**45**

***Communicating at Advisors Excel: My Internship Experience***

**Rachel Henry**

Mentor: James Schnoebelen, Communication Studies

For my presentation, I will be giving an overview of the highlights of my internship at Advisors Excel as the Strategy Intern. Throughout this internship, I learned several key skills to prepare me for a full-time position. These skills include team and group communication, professional written and verbal communication, critical thinking, collaboration, and more. I had several important responsibilities in this internship and had many opportunities for growth and development in my personal and professional skills.

**46**

***Communicating at WU Career Services: My Internship Experience***

**Rachel Holland**

Mentor: James Schnoebelen, Communication Studies

I will be providing an overview of my Communication internship at WU Career Services.

**47**

***The Study of Internal Operations of a Small Business***

**Gena Michaelis**

Mentor: James Schnoebelen, Communication Studies

This study will be dissecting down the operations of the back room for small business running, as for research collected during working at a small Topeka business during an internship. It will be broken down into four sections including marketing and advertising strategies, management and personnel, client base and profit, and changing demographics and inventory. All sections will cover past, present, and future changes in strategies and operations, followed by what was found with trends and if they were successful or unsuccessful.

**48**

***Development of Modified Gold Nanoparticles for Colorimetric Detection of Lead in Drinking Water***

**Ethan Conners**

Mentor: Seid Adem, Chemistry

The purpose of this research was to develop gold nanoparticle (GNP) based analytical sensor for colorimetric detection of  $Pb^{2+}$ . The surface of the gold nanoparticles was modified using trisodium citrate and malonic acid/maleic acid (MAMA 1:1) in a 1:2 ratio by volume to create a

MAMA-GNP sensor capable of detecting a nanomolar range of  $\text{Pb}^{2+}$  ions. We studied the effect of pH and the  $\text{Pb}^{2+}$  ion to GNP ratio to get an optimal ratio that results in max sensitivity to  $\text{Pb}^{2+}$  detection. Selectivity tests were carried out to study interference by other metal ions commonly found in contaminated drinking water. The carboxyl group of malonic and maleic acids bound to the surface of the GNP allowed the MAMA-GNP to show strong affinity towards  $\text{Pb}^{2+}$  thereby increasing its selectivity over other ions ( $\text{Ca}^{2+}$ ,  $\text{Cd}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{Co}^{2+}$ ,  $\text{Fe}^{2+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Zn}^{2+}$ ,) and anions ( $\text{Cl}^-$ ). The MAMA-GNP only aggregated in the presence of  $\text{Pb}^{2+}$  ions and the color of the solution changed from red to purple. UV-VIS spectroscopy was used to follow the change in the absorption spectrum of these colorimetric analyses. When the absorbance ratio at 600 nm and 520 nm versus concentration of  $\text{Pb}^{2+}$  ions was plotted, a linear response range from 10  $\mu\text{M}$  to 200  $\mu\text{M}$  was obtained with a detection limit of 6.44  $\mu\text{M}$  ( $R^2=0.981$ ). A similar concentration was also observed with the naked eye. The MAMA-GNP is found to be stable for more than six months when stored at 4 °C. The results obtained in this research showed MAMA-GNP can detect  $\text{Pb}^{2+}$  through colorimetric sensing that is reliable, quick, and inexpensive.

## 49

### *Innocent; A Song About Wrongful Convictions*

**Peyton J. Hanna**

Mentor: Tracy Routsong, Integrated Studies

*WU*mester

Every year 1-6% of the U.S. prison population are actually innocent, ~20,000 people, disproportionately Black and Brown men (Innocence Project, 2024). Using information I have learned during my Integrated Studies coursework, I have written a song that encapsulates some of their stories.

# *Reception*

## **Flavors of the South/ Mid Atlantic**

Carolina Pulled Pork Sandwiches

Crab Cakes with Remoulade Sauce

Jackfruit BBQ (vegan)

Spicy Cajun Tofu Bites (vegan)

Fried Green Tomatoes

Macaroni Cheese Bites

Shrimp and Grits

Banana Pudding



# Apeiron Committee 2024

**Courtney Sullivan, Chair**

**Administrative Support: Christine Rhoads and Michaela Saunders**

---

## **Print Materials and Program**

- Erin Chamberlain (Chair)
- Matt Arterburn
- Dion Harnowo
- Sam Leung
- Michael McGuire
- Rodrigo Mercader

## **Food and Reception**

- Sangyoub Park (Chair)
- Lindsey Ibanez (Co-Chair)
- Eric Grospitch

## **Poster Presentations**

- Brian Thomas (Chair)
- Rob Coffelt
- Michael McGuire
- Yang Song

## **Oral Presentations**

- Jennifer Wagner (Chair)
- Adebanke Adebayo
- Zenova Williams

## **Fine Arts Presentations**

- Madeline Eschenburg (Chair)
- Wonjae Lee
- Julie Noonan
- Anya Pogorelova

## **Publicity**

- Chris Jones (Chair)
- Regina Cassell
- Michaela Saunders
- Zach Stephens (*Student Representative*)

## **Web Content and Registrations**

- Bruce Mechtly (Chair)
  - Christine Rhoads
  - Michaela Saunders
-



# *Index of Presenters and Mentors*

(name, page number)

## A

Adebayo, Adebanke, 27, 28  
Adem, Seid, 35  
Alcorchas-Gomez, Paola, 28  
Anderson, Anna Rose, 14

## B

Baker, Blaire, 14  
Bayliss, Karli J., 9  
Bennett, Shelbie, 19  
Beyer, Kayla M., 21  
Bjerke, Susan, 20  
Blenden, Cade, 27  
Blissett, Zoey Adrianna, 23  
Booth, William, 20  
Boydston, Julie, 22, 25, 29, 30, 31  
Burr, Triston, 8

## C

Cain, Desiree, 15  
Campos, Brittany, 17  
Carter, Aja B., 7  
Chaffin, Chloe Ruth, 15  
Cheek, Sheyenne S., 24  
Cloud, Jon M., 20  
Conners, Ethan, 35

## D

Davidson, Adrienne R., 26  
Davis, Abby E., 9  
Del Castillo, Humphry Isaiah, 8  
Derrington, Liz, 23  
Di Gregorio, Alessandro, 10  
Doherty, Devon, 14, 32  
Duncan, Angela, 15, 21  
Dunn, Logan C., 20  
Duvall, Liz, 33

## E

Easter, Charlize, 9  
Etzel, Dennis, 7

## F

Fieger, Olivia, 28  
Finch, Sam, 5, 8  
Flores, Marco, 27

## G

Gallegos, Michael, 12  
Gearhart, Tobin C., 9  
Gibson, Linzi, 26  
Gilbert, Dylan, 34  
Gogel, Randy, 15  
Grame, Dana, 20  
Grimmer, Kristen, 9  
Guzman-Slater, Vanessa, 27, 32

## H

Hanna, Peyton J., 36  
Hansen, Von, 5  
Hart, Kristine, 15  
Hartman, Amanda, 23  
Hayes, Oshara, 33  
Henry, Rachel, 35  
Heusi, Michelle, 19  
Holland, Rachel, 35  
Howard, Erinn, 18  
Huff, Kelly, 5  
Hutley, Madelyn, 31

## J

Jeter, Sierra, 11  
John, Chelsea N., 30  
Johnson, Jarmell Jawaun, 28  
Jones, Tucker, 17, 21, 22, 24  
Joshi, Aditya, 13, 25

## K

Kay, Carson, 27  
Keller, Jessamyn L., 19

## L

Lake, Kameron, 33  
Lee, Brianna C., 23  
Lewis, Malachi A, 9  
Lima, Yuri, 5  
Limbu, Sumnima, 13, 32

## M

Mack, Tiffany, 7  
Malinverni, Nicole, 22  
McCune, Ashley, 23  
McGuire, Michael, 32, 34  
McMahon, McKenzie Jo, 29

Michaelis, Gena, 35  
Middendorf, Erin, 23  
Miller, Jason, 14, 15, 17  
Moddelmog, Linsey, 11, 12  
Moore, Pat, 34  
Moore, Samuel C., 18  
Mullen, Andrew, 8  
Munsell, Keetan B., 10

## N

Nelson, Emma Jo, 26  
Nguyen, Hoang, 31

## P

Paden, Shianne, 28  
Paudyal, Girish, 31  
Payne, Jayden, 24  
Petersen, Brooke, 7  
Powell, Brookelynn N., 30  
Preister, Christopher Timothy, 30  
Provorse, Dave, 19  
Pryor, Isabelle T., 23

## R

Reb, Emily M., 13, 25  
Reed, Benjamin, 10, 30  
Rice, Payton M., 21  
Rizzo, Dylan, 5  
Robert, Brock, 14, 32  
Ropp, Weston J., 28  
Routsong, Tracy, 15, 20, 24, 28, 33, 34, 36

## S

Sandquist, Patrick W., 9  
Sandquist, Peter E., 5  
Sands, Lucas, 9  
Schmidt, Pamela, 13, 14, 25, 32  
Schmidtlein, Andrew J., 13, 25  
Schmitz, Basil, 8  
Schmitz, Ethan, 20  
Schnoebelen, James, 19, 23, 29, 32, 33, 35  
Seidel, Jess, 9

Shaffer, Daniel J., 12  
Sieben, Levi S., 19  
Slapar, Kylar, 22  
Slusser, Lauren, 31  
Smalley, John B., 9  
Stumbo, Kaili P., 7  
Sullivan, Courtney, 5, 8  
Sun, Nan, 8, 9

## T

Tardiff, Maria J., 7  
Taylor, Sophia R., 24  
Tenbrink, Kya, 29  
Thimesch, Desi N., 20  
Thomas, Brian, 10  
Thompson, Codi P., 7  
Thompson, Lily Claire, 32  
Tyler, Mary G., 20

## U

Unruh, Sue, 24

## V

Vannetti, Stephanie M., 28  
Vopat, Jadelynn M., 26

## W

Wagner, Tracy, 26  
Warner, Cole, 13, 25  
Warren, Daniel, 9  
Willey, Kayla L., 25  
Williams, Jeff, 9  
Wohletz, Courtney, 18  
Wolnik, Kyle James, 11  
Wools, Catherine, 13, 32  
Wynn, Kerry, 11, 15

## Z

Zamora, Julian A., 13, 25  
Zwikstra, Corey, 7



**WASHBURN**  
UNIVERSITY



---

*Special thanks go to the*

*College of Arts and Sciences,  
School of Applied Studies,  
School of Business,  
School of Nursing,  
Office of Student Life,  
Friends of Mabee Library,  
Washburn University Alumni Association and Foundation,  
and Washburn Transformational Experience*

*for their support of student academic and  
creative excellence through Apeiron.*

---

---