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Architecture and Arts

Position #: 1

Mentor name: Joe Colistra jcolistra@ku.edu Architecture

Remote or in-person: This would be an in-person position.

Job/project title: Project Coordinator

Project description: This research initiative involves the Scholarship of Engagement. This position will allow an emerging scholar to engage with faculty, researchers, industry partners, and community members in the creating new knowledge through The Downtown Lawrence Design Center and its community engagement activities. The Downtown Lawrence Design Center is a new initiative of the School of Architecture and Design that would embed students and researchers in downtown Lawrence on Mass Street working on specific downtown planning and design issues that can be developed, disseminated, applied to a scale that is global in its reach and impact. This initiative will engage faculty from both the Departments of Architecture and Design and will forge collaborations with community stakeholders and industry partners.

Potential student tasks and responsibilities: The student will need to be present in a downtown Lawrence location providing coordination and support for community collaborations and projects including background research, graphics, public meetings, design reviews, architectural critiques, and panel discussions. The student will be asked to assist in the coordination of events in the Center, engage with the public, explain the mission of the Center, provide information about the School of Architecture & Design. There may also be the need to assist with the design of displays of exhibits of faculty/student work including boards, drawings, models, publications, etc." **Student qualifications and characteristics:** "Outgoing, curious, friendly, takes initiative, detail oriented, responsible. It would be ideal that the student be present at the Center in Downtown Lawrence during their work hours, however, these hours can be flexible.

Additional Comments: Center location is anticipated to be on Massachusetts street in downtown Lawrence.

Position #: 2

Mentor name: Kapila Silva kapilads@ku.edu Architecture

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: Organizing a Data Base on Heritage Studies

Project description: The student will organize a large data base on cultural heritage conservation and management. The data base consists of journal articles, books, and book chapters on this subject in the PDF format. The student will rename all the documents according to a naming system developed by me. The student will then organize these documents into different folders under different aspects/headings of heritage conservation. This classification system is also developed by me. The student will simply follow the system. If there are questions, I will also be available to answer them. Student will also locate certain

books in KU libraries, download articles from KU library or other online databases, as well as scan certain hard-copy prints of documents." Potential student tasks and responsibilities: "1. Use of a personal computer with Windows operating system. 2. Use of PDF documents (naming, saving, etc.). 3. How to create different folders in a computer. 4. Being able to follow a naming system and classification system given to the student. being able to quickly read the title, keywords, and abstract of a publication and identifying what is about and thus where to file it (I will provide this training to the student). 5. Use of a document scanner (I could teach how to do this and provide access to a scanner). 6. Being able to do online browsing and download documents.

Student qualifications and characteristics: Work will be done remotely. However, I would ask the student to meet me every two weeks to discuss the progress and answer any questions. Student should be punctual to meetings and meet biweekly deadlines. Attention to details and being organized is key. Some curiosity about heritage studies would be useful. No need to be a student in architecture. This would however be of interest to students in anthropology, architecture, cultural studies, art history, history, and humanistic geography.

Position #: 3

Mentor name: María Velasco mvelasco@ku.edu Visual Art

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Reclaiming Home: Remembering the Topeka Bottoms

Project description: “Reclaiming Home” will tell the story of Topeka’s Bottoms neighborhood through oral history, a documentary and art. In the 1950s and ’60s, more than 3,000 Topekans were forced to leave their homes and businesses in the Bottoms district in downtown to make way for new real estate development as part of the Urban Renewal Project. The area, covering more than 20 blocks, was the heart of a thriving Black business district and robust Latinx community. “Reclaiming Home” aims to reclaim the stories of these displaced communities through the use of oral histories, community mapping, a documentary and an exhibit that recreates the neighborhood through art — all at a critical time when the city is planning another round of urban renovation in the same area. Velasco has partnered with Matthew Jacobson, professor of Film and Media Studies and local historians Donna Rae Pearson and Valerie Mendoza both of the Other Roads Consulting, Inc. for this project. “This local story, in the backyard of both the Kansas state capitol and KU, resonates during a time of national violence against Black and Brown communities” said Velasco. ”We hope this project will increase civic engagement among community members by addressing historical and current inequities,” she continued. This project is supported by Stories for All, a partnership between the Hall Center for the Humanities and the Institute for Digital Research in the Humanities at the University of Kansas, and The Andrew W. Mellon Foundation.

Potential student tasks and responsibilities:

Primary Activity:

1) converting audio & video to text files, essential for final editing and film subtitles. We plan to conduct about 20-30 interviews, and other activities. Transcripts are part of the workflow to carry the project to completion. Student doesn't need to be present for filming, and will be trained to handle the audio and video files for logging, transcription, and basic organization.

Secondary Activities:

2) assist crew during filming sessions and community activities in Topeka location - if available, mostly Fri~Sun, but not required. No need to have own transportation, as there will be ride-share.

Student qualifications and characteristics: Students with an interest in Film, Art, History are welcome to apply. No previous experience is necessary. There will be weekly or bi-weekly meetings to review progress and make sure that we are meeting our deadlines. We are looking for a student who pays attention to detail, is organized, and reliable. This is a great project to be involved with and learn about our community and the little known history of the Topeka Bottoms, right here. This project offers students diverse research opportunities through the lens of art, film, and history.

Business and Communications

Position #: 4

Mentor name: Brett Bricker bbricker@ku.edu Communication Studies

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: KU debate student outreach

Project description: We are looking to expand our debate team in several ways. First, we are participating in a new style of debate called British Parli debate. Second, we are starting a novice program. Third, we are doing more proactive outreach to diverse minorities in high school who have limited debate experience, hoping to integrate them into the team. Students in this position would help with those efforts.

Potential student tasks and responsibilities: Students would be a part of an outreach campaign to incoming KU frosh as well as students on campus. This would involve emailing, holding office hours/visits and planning fun events hoping to attract new students. "

Student qualifications and characteristics: Students must be available 5 hours per week. Those hours could be pretty flexible, except for pre-planned events. Students must be responsive to email and be responsible enough to organize events. They would not be doing this alone, but it would require significant attention to detail. The ideal student would be someone with debate experience, potentially interested in coaching debate or pursuing a field in education.

Position #: 5

Mentor name: Kim Bruns kbruns@ku.edu School of Journalism and Mass Communications

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: Undergraduate Research Assistant

Project description: The Center for Digital Inclusion (CDI) is located at the University of Kansas School of Journalism and Mass Communications. The focus of CDI is to enhance citizens' digital access and information literacy, especially among underserved populations, through community-based research and evidence-based technology education. An emerging scholar would be an important member of our team (faculty, graduate/undergraduate students and staff) and would gain experience in working on research projects and gain knowledge in the importance of access to digital technology and community-based research approaches.

Potential student tasks and responsibilities: The Undergraduate Research Assistant would participate in the following activities:

1. Create project focused social media postings on Facebook, Twitter, and Instagram
2. Engage with community partners and team members in designing outreach and research activities
3. Involved in conducting literature review
4. Participate in research team meetings
5. Participate in KU School of Journalism and Mass Communication events
6. Other tasks that spark the student's interest

Student qualifications and characteristics:

1. Interest and willingness to learn about digital inclusion
2. Interest in social media
3. Experience with Microsoft Word, Excel, Outlook, and PowerPoint
4. Student should be comfortable working independently with supervision as well as on a team

Position #: 6

Mentor name: Joel Mendez jmendez2@ku.edu School of Public Affairs and Administration

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Developing an Equitable Transit System

Project description: The objective of this project is to explore ways in which transit service providers can better meet the needs of vulnerable and transit dependent persons. This project will focus on exploring ways in which transit service providers eliminate barriers which may discourage people from taking transit.

One common barrier which people experience is fare affordability. In an effort to address this issue several transit service providers (Kansas City area Transportation Authority, Denver Regional Transportation District, and Los Angeles County Metropolitan Transportation Authority) are considering eliminating bus fare. In this project we will explore the case of one major transit provider which has already eliminated bus fares. We explore how this policy has impacted the access which people have to essential destinations/services which can greatly enhance quality of life and the ability to escape poverty.

Another barrier which may discourage people from taking transit is centered around safety. Here we will explore how students perceive their personal safety while using transit and how that impacts their access to essential destinations/services. Findings will provide information to transit agencies which will allow them to gauge how they are serving the needs of vulnerable members of their ridership base. This can inform planning and policy decisions that may contribute to the delivery of services that more adequately serves the needs of the populace.

Potential student tasks and responsibilities: Students will be tasked 1) Searching for documents, such as reports and research articles, which can help develop this project, 2) Collect basic demographic information for cities from sources like the US Census, 3) Administrative duties such as organizing datasets and reports in a Microsoft Teams page. There will also be opportunities to help in the development of a survey which will collect the data needed to carry out this project.

Student qualifications and characteristics: Applicants should be interested in equity, curious, enjoy detective work, organized, an excellent reader, and detail oriented.

Additional Comments: The working schedule is flexible based on a student's commitments.

Position #: 7

Mentor name: Brad Osborn bradosborn@ku.edu Music

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: Music production and promotion

Project description: I am a music theorist and composer in the School of Music. I need somebody to assist me in the production of several things related to music. This ranges from help preparing two forthcoming textbooks on music, to help mixing/mastering/producing my own shoegazy-rock music, to promoting said music on social media.

Potential student tasks and responsibilities:

- Indexing a book
- Contacts composers to deal with permissions
- Preparing Word files
- Organizing files in Google Doc
- Mixing tracks in a digital audio workstation
- Mastering full songs
- Creating album art
- Promoting music online

Student qualifications and characteristics:

ESSENTIAL:

- Familiarity with, and access to, Microsoft Word
- Ability to manage a large number of files using Google Docs, Dropbox, or other online file sharing system
- Responds to emails promptly, respects deadlines

- Has experience using, and access to, software such as GarageBand, Ableton, Logic, Fruity Loops, etc. or other digital audio workstations (DAW)
- Knows how to use various social media channels, including Instagram, Facebook, Twitter, TikTok, to promote content

PREFERRED (optional):

- Has used Sibelius, Finale, or other professional musical engraving software
- Has written research papers that use APA, Chicago, or other standard citation styles
- Has collaborated on Word documents using the “track changes” function
- Knowledge of popular and/or classical music
- Reads musical staff notation, guitar tablature, and/or piano diagrams
- Has experience with Apple’s Logic DAW
- Has graphic design and/or photography experience
- Can create album artwork
- Has created music or played in a band

Position #: 8

Mentor name: Cameron Piercy cpiercy@ku.edu Communication Studies & Human-Machine Communication Lab

Remote or in-person: This position could be done remotely or in-person.

Job/project title: How AI affects Work

Project description: Are you interested in how people work with complex technologies (like algorithms, artificial intelligence [AI], and robots)? This is an opportunity to understand how people work with complex technologies in everyday work. In this position, you will help track new findings in technology at work. We’ll work together with the other members of the HMC lab on experiments and surveys to better understand AI in every day life. The only requirement is an interest in technology and work.

Potential student tasks and responsibilities:

- Find and summarize new research on technology and relationships.
- Help maintain a growing database of human-machine communication research (see <https://hmc.ku.edu>)
- Help design and collect experimental data involving interaction with AI.
- Create and distribute new surveys to folks who work with emerging technologies like algorithms, artificial intelligence, and robots.
- Meet weekly with lab members
- (Optional) Students who are interested in coding may have opportunities to learn and practice coding.

Student qualifications and characteristics: Scheduling is flexible, students can work in-person or online. Interest and curiosity are the most important skills for students considering this job. This position is suitable for social science students (e.g., students from psychology, sociology, public administration, communication studies, business) or professional programs (e.g., computer science, engineering) are welcome to apply.

Additional Comments "Check out our website (<https://hmc.ku.edu>), we're building a team of students who work together to learn about AI and relationships, especially at work. Next year we'll have graduate students, a McNair Scholar, and you as part of the team. I am a first-generation faculty member, a member of the Choctaw Tribe of Oklahoma, and serve as a Multicultural Scholars Program (MSP) director for CLAS.

Position #: 9

Mentor name: Nagarajan Sethuraman nagarajan@ku.edu Analytics, Information, and Operations Management, School of Business

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Analytics/Machine Learning of Text and Image Data for Supply Chain Management and Innovation

Project description: In this project, we explore the link between firms' supply chain management abilities, innovation capabilities, and stock market performance. The project would utilize data from multiple sources and use analytics/ statistical methods to explore this link. For example, we will be collecting and analyzing text and image data from patents filed in the United States and US stock market filings. The undergraduate student researcher will work closely with me (Nagarajan Sethuraman) to understand the project scope, collect data, and eventually also help with analyzing data.

Potential student tasks and responsibilities: The student will learn the basics of supply chain management

The student will learn data collection and organization methods that are at the core of many analytics careers.

The student will learn the basics of patents and technological innovation

The student will learn the basics of machine learning with image data

The student will eventually also help me with data analysis, visualization

If the student makes sufficient progress, they may also help me with writing.

Student qualifications and characteristics:

- 1) Ability to meet and work on Fridays (it can be through Zoom)
- 2) Desire to learn more about analytics, data collection, and management
- 3) An interest in graduate school (MBA/MS/Ph.D.) or entrepreneurship after your undergraduate degree would be a plus though certainly not a must "

Position #: 10

Mentor name: Karthik Srinivasan karthiks@ku.edu Analytics, Information, and Operations Management

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Developing model agnostic methods for machine learning interpretability

Project description: Machine learning and artificial intelligence algorithms use data to assist humans in decision making. They have been shown to be effective in solving complex problems in multiple problem domains including autonomous driving, medical diagnoses, cybersecurity, financial fraud, etc. It is often the case that more the complexity of the algorithms, better is their

performance. But the complexity of the algorithm, commonly termed as its ‘black-box’, reduces the human interpretability of these systems. Humans as end users often prefer machine learning systems that are more interpretable as it garners trust and transparency in functionality.

The project involves developing novel methods for improving interpretability of machine learning models. On successfully completing the project, the student will have a better understanding of machine learning interpretability, academic research methodologies, and a direction to pursue to a research intensive career in future.

Potential student tasks and responsibilities: Reading literature in model-agnostic methods in machine learning interpretability (MLI) discipline. Brainstorming on basic methods such as Local Interpretable Model-Agnostic Explanations (LIME), SHapley Additive exPlanations (SHAP) and its extensions such as Autoencoder LIME (ALIME), TreeSHAP, etc. Implementing existing models on sample datasets using R/Python, based on my step-by-step guidance. "

Student qualifications and characteristics: I would require the student to have read relevant chapters from the Interpretable Machine learning book by Christoph Molnar <https://christophm.github.io/interpretable-ml-book/> and interpret the readings in their own words. The student should be interested in mathematics and analytical thinking. Data analysis skills and knowledge of programming software such as R or Python are not necessary but preferable, and can be learned during the RAship. Important traits expected from the student include the desire to learn new topics such as machine learning interpretability and openness to do basic programming in either R or python. I would prefer blocking a suitable time of 1hr/week to discuss on zoom about progress and future steps.

Position #: 11

Mentor name: Emily Vietti evietti@ku.edu Institute for Leadership Studies

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: Undergraduate Research Assistant

Project description: *Ready to Run Kansas* is a training program run by the KU Institute for Leadership Studies that empowers Kansas women with the skills, knowledge, and confidence to run for public office and become more civically engaged.

As a part of this project, we conduct a data collection and research project to better understand how many women are serving on municipal boards and commissions in Kansas, as well as the broader gender parity trends in civic service across the state. Our 2021 report from the first cycle of this project found that women are underrepresented on municipal “power” boards that have a direct influence on policymaking and financial resources in Kansas cities/towns, holding only about 25% of seats on planning/zoning boards. Future research will continue to track representation trends and also examine issues of information access and transparency that may impede women’s appointments to these boards/commissions. (The full 2021 report can be accessed here: https://womenlead.blog.ku.edu/wp-content/uploads/2022/04/Banwart_Vietti_Gender_Balance.pdf)

We are looking for a research assistant who can help us collect and organize the data for the 2023-24 cycle of this research project, as well as assisting with ideas and additional data collection to help us expand the scope of the project.

Potential student tasks and responsibilities: Our undergraduate research assistant primarily will be tasked with helping to collect and organize the data for the next iteration of our report on gender representation on municipal board and commissions in the state of Kansas. This will include (but is not limited to): collecting information from city/county websites; sending email requests; requesting information via phone; submitting records or Freedom of Information Act (FOIA) requests; organizing information using spreadsheets in Excel and/or web applications; assisting in data interpretation and visualization (making graphs and charts); assisting in report writing. Student qualifications and characteristics: "We hope that the student who wants to work with us recognizes the importance of women's civic leadership and having women represented in decision-making spaces, as that is the overriding theme of the work. Our undergraduate research assistant will be completely trained to do the work we are asking them to do, so they do not currently need to know how to do any of the tasks listed above, however we would love someone who is eager to learn and willing to take risks and experiment.

We are able to be flexible with schedule and modality (in-person vs. Zoom), and we hope that the undergraduate research assistant will also be flexible as the project develops over the course of the year, as job responsibilities may shift over time. Finally, as this is a relatively new project with a lot of room for expansion and change, we hope to find a research assistant who can bring creativity and new ideas to our team.

Position #: 12

Mentor name: Judy Watts judy.watts@ku.edu Journalism and Mass Communication

Remote or in-person: The job will be done remotely.

Job/project title: Research Assistant for Media Studies

Project description: This position will assist Dr. Watts to conduct research on media effects with the School of Journalism and Mass Communication. No prior research experience or statistical knowledge is necessary for this position. Broadly speaking, students can expect a variety of tasks that include all phases of a research project from preparation to data collection to data cleaning. The majority of these tasks can be done remotely and at a time of the student's choice. An internet connection and computer are necessary to fulfill research assistance duties.

The types of research that will be conducted in the school year 2023-2024 may involve how children and parents discuss storybooks that involve topics that cover race, how college students remember and learn about medicated abortion from Grey's Anatomy, and how viewers respond to villain characters in films. Additional research studies and topics may arise throughout the year, and students are welcome to propose media studies if desired.

Potential student tasks and responsibilities: Students may assist with a variety of tasks and responsibilities that will change from week to week. Examples include assistance with stimuli creation which may involve editing clips of television shows or writing. The student worker will also assist with data collection by sending out reminder emails to research participants to

take part in studies. Assistance may also be needed with checking transcriptions of conversations for accuracy. Finally, the research assistant will help with manuscript preparation by conducting searches on google scholar for appropriate academic research, etc.

Student qualifications and characteristics: A successful student worker will be well organized and have attention to detail. Although not necessary, those who are interested in learning about the effects of media and entertainment on behaviors and attitudes are encouraged to apply. Meetings will occur weekly and may be scheduled less frequently throughout the semester. The applicant should be able to set aside an hour for weekly check-in meetings (over Zoom or Teams). Finally the student should be able to work independently.

Engineering and Computer Science

Position #: 13

Mentor name: Alan Allgeier alan.allgeier@ku.edu Chemical and Petroleum Engineering

Remote or in-person: This would be an in-person position.

Job/project title: Material Science: Porous Materials

Project description: In the field of material science, porous materials play many important roles. Separation of gas mixtures can be effected using porous materials with opening sizes similar to the diameter of the gas molecules, catalysts can be developed based on porous materials that enhance reaction rates and in biotechnology porous materials can be used as drug delivery agents or as tissue scaffolds. Our group has several tools for characterizing the size and volume of porous media.

Potential student tasks and responsibilities: Student will be responsible for learning about porous materials and conducting characterization of the materials using tools such as gas adsorption, nuclear magnetic resonance (NMR) and others. For these tests the students will weigh out the solids, and potentially do serial dilutions (for NMR) and operate the equipment. In doing gas adsorption the student will use vacuum ovens and measure weight loss on drying, install samples on a high vacuum line and operate the instrument which also uses liquid nitrogen. For NMR the student will make samples of a known polymer to water ratio and place them in the instrument, which uses magnetic fields to "look" at the water inside the pores. The work can easily be broken down into portions to facilitate student schedules during a day / week. After running the test the student will tabulate data in Excel and work with grad student collaborators to understand how the pore size affects things like gas separation and reaction or, in the other project, drug delivery.

Student qualifications and characteristics:

- 1) Majoring in Science or Engineering (engineering preferred).
- 2) High school chemistry and physics and 4 years high school math
- 3) Scheduling: minimum 4 h/ week of total work with at least one 2 hr block per week and one weekly 30 min work planning meeting with a graduate student supervisor
- 4) Familiarity with Microsoft Excel and Microsoft Operating System in general.

Position #: 14

Mentor name: Felipe Anaya felipe.anaya@ku.edu Chemical and Petroleum Engineering

Remote or in-person: The job requires the student to work in-person only.

Job/project title: Pilot Distillation Experiment Assistant/Helper

Project description: The Chemical Engineering Senior Laboratory (LEEP2 LAB G429) is in the final stages of the commissioning a pilot plant distillation column. This equipment will be used for the laboratory course offered to seniors beginning in the Spring 2024 (C&PE 626). The next stage of the experiment development, taking place this summer, includes safety reviews, updating P&ID drawings, labeling instruments, equipment testing and data collection. This is a unique opportunity for students of all levels in the Chemical Engineering curriculum or related fields to gain experience with pilot plant equipment development here in our own school of Engineering. A team of undergraduate students is being formed to assist with some of these activities in line with their abilities. As student from the Emerging Scholars program is a great fit for a position in this team and will provide an opportunity to build relationships with faculty and other undergraduate students involved in the project.

Potential student tasks and responsibilities:

- Labeling instruments using a label maker,
- Compare equipment to existing diagram and make sure diagrams are correct
- Basic diagram updating using CAD software (adding or removing lines from an existing diagram)

Student qualifications and characteristics:

- Must be able to work in person
- Interest or curiosity about traditional chemical engineering equipment (i.e., distillation column)
- Ability or desire to learn to do basic work with excel, CAD software
- Attention to detail and organized

Additional Comments : This project is in the context of developing Chemical Engineering equipment and experiments used in teaching a senior chemical engineering laboratory. I think this is a great unique opportunity to expose first year students to equipment and concepts they will learn in depth later in their college career and potentially apply in their career as engineers. In a sense this opportunity is closer to an engineering internship than a research focused job.

Position #: 15

Mentor name: Caroline Bennett crb@ku.edu Civil, Environmental, and Architectural Engineering

Remote or in-person: The student can work either in person or remotely.

Job/project title: Fatigue & Fracture - Research in Structural Engineering

Project description: This project is aimed at exploring the structural performance of steel and aluminum highway structures, including bridges, large overhead highway sign structures, and tall lighting structures. In particular, the project is aimed at characterizing the performance of

these highway structures with regard to fatigue cracking and sudden failure through brittle fracture, and developing techniques to minimize such failures.

- Potential student tasks and responsibilities:** Potential student tasks include the following:
- Preparation of laboratory fatigue and fracture tests. This could include creation/fabrication of test specimens, inspection of test specimens for fatigue cracking, and installation of instrumentation.
 - Execution and monitoring of physical laboratory tests. This could include inspection of test specimens for fatigue cracking, recording test data, manipulating test data, etc.
 - Involvement with computer simulations of structural behavior. This could include creation of computer simulations, or manipulation of existing computer models.
 - Manipulation and analysis of experimental and analytical data. This could include plotting data using Excel (or other software) and presenting findings in written and spoken communication formats.
 - Participation in weekly research meetings

- Student qualifications and characteristics:** Successful applicants for this position should:
- exhibit responsible behaviors, including: email responsiveness, good time management, attention to detail, and organization skills.
 - Be interested in learning more about structural engineering, which is a subfield of both civil engineering and architectural engineering.
 - Students should be available for minimum blocks of time of two hours at least a couple of occasions a week.

Additional Comments The fatigue and fracture research group is vibrant and diverse! We aim to make the built environment safer and more reliable.

Position #: 16

Mentor name: Claudia Bode bode@ku.edu Kansas NSF EPSCoR Office

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Undergraduate Project Assistant

Project description: Along with the opportunity to be involved in research activities related to our National Science Foundation-funded project, the Undergraduate Project Assistant may participate in the following activities:

1. Create project focused social media postings on Facebook, Twitter, and Instagram
2. Engage with community partners and team members in designing education, outreach, and research activities
3. Contribute to writing blogs
4. Participate in team meetings
5. Other tasks that spark the student's interest

Potential student tasks and responsibilities:

1. Interest and willingness to learn about resilience & social equity
2. Interest in social media
3. Experience with Microsoft Word, Excel, Outlook, and PowerPoint

4. Student should be comfortable working independently with supervision as well as on a team
5. Interest in science communication.

Student qualifications and characteristics: The student can work either in person or remotely (hybrid).

Position #: 17

Mentor name: Justin Hutchison jhutch@ku.edu Civil, Environmental, and Architectural Engineering

Remote or in-person: This would be an in-person position.

Job/project title: Characterization of contaminated soils

Project description: Emerging contaminants of concern in groundwater and soil affect human health. The health impacts manifest after consuming drinking water from contaminated groundwater or direct exposure in vulnerable populations, such as children playing in and consuming soil. Health impacts include developmental delays and liver and kidney damage. Engineered treatment of these contaminants is costly. For example, the American Water Works Association (AWWA) conservatively estimates that treatment may require \$370 billion in capital investment with \$12 billion in annual operation and maintenance costs to treat emerging contaminants of concern in the United States. Understanding and promoting the degradation of these contaminants in groundwater and soils could avoid these costs and lead to greater source water protection.

The research component of this emerging scholars project will characterize soil properties from soil cores taken in collaboration with the Kansas Geological Survey. The student will be able to use advanced analytical equipment such as ion chromatography, inductively coupled plasma optical emission spectroscopy, and optical spectroscopy. The Emerging Scholar will also have the opportunity to culture anaerobic organisms that can degrade emerging contaminants and learn to track microbial growth, perform contaminant-degrading enzymatic assays, and quantify proteins.

Potential student tasks and responsibilities: The student will be responsible for characterizing soil cores taken in collaboration with the Kansas Geological Survey. The characterization will include established protocols currently used in the lab, including conductivity, pH, and texture.

Student qualifications and characteristics: Students should be willing to participate in in-person experimental activities. Students should be familiar with (or willing to learn) Excel to manage data. Students interested in Environmental Engineering or Environmental Science may find the work better aligned with their professional interests.

Position #: 18

Mentor name: Justin Hutchison jhutch@ku.edu Civil, Environmental, and Architectural Engineering

Remote or in-person: Remote work is possible if the student has computer resources. Computer resources will be provided to the student within the School of Engineering. In-person project meetings will be held for the 2023-2024 year.

Job/project title: Evaluating dimensions of equity for drinking water distribution systems.

Project description: Rural water districts serve some of the most disadvantaged populations in Kansas and rely on extended distribution networks that pose chemical and biological hazards. These hazards arise due to extended water age that can climb to 28 days or longer in significant wet weather events (rural water networks also supply a portion for irrigation, and demand is reduced in wet weather events). Within the last ten years, there has been more evidence of pathogen growth within water distribution systems, especially if the residual disinfectant is reduced, including Legionella and Mycobacterium. This project seeks to address two fundamental research questions:

What is the threat of residual disinfectant breakdown and the rise of drinking water pathogens on rural water networks before, during, and post-disaster events?

How do water quality considerations integrate with measures of social equity to influence decisions related to the installation and maintenance of disinfection booster points?

The project will use open-sourced software to create drinking water distribution systems. The system performance will be evaluated for the decrease in residual disinfectant and the rise of opportunistic pathogens.

Potential student tasks and responsibilities: The student will help create a water distribution system for one Kansas community. This network will be developed in US Environmental Protection Agency software, EPANet, and tested in the Water Network Tool for Resilience (WNTR). The student will be able to interact with a large team of researchers looking at Adaptive and Resilient Infrastructure driven by Social Equity (ARISE, <https://nsfepscor.ku.edu/track-1-arise/>). The Emerging Scholar would be paired with a senior undergraduate researcher to accomplish these tasks.

Student qualifications and characteristics: Students should be willing to learn new software platforms, including EPANet. Students should be familiar with (or willing to learn) Excel to manage data. Students interested in Environmental Engineering or Environmental Science may find the work better aligned with their professional interests.

Position #: 19

Mentor name: Remy Lequesne rlequesne@ku.edu Civil, Environmental, and Architectural Engineering

Remote or in-person: This would be an in-person position.

Job/project title: Engineering Research on Reinforced Concrete Structures

Project description: My research group is interested in how reinforced concrete (RC) structures respond to a variety of loads, such as traffic loads, wind loads, and earthquakes. We study ways to make RC structures safer and more efficient. Much of our work is experimental, which means we build structural components (pieces of buildings like beams and walls) and then load them until failure. By studying the deformations and failure modes, we learn a lot about how to improve the design.

After you get experience in our laboratory, and depending on your interests and the specific projects that are active at the time you join our group, I will aim to find some feature of ongoing projects that you can take ownership of. This is something we can decide together. For example, this could be analysis of data or testing of specific specimens we design together."

Potential student tasks and responsibilities: If you joined our group, you would start by working in our laboratory alongside graduate students and other undergraduate students building, testing, and disassembling specimens. Your responsibilities would include helping to build the formwork, tie reinforcement, and cast concrete, as well as setting up for and helping to test specimens. You can also attend our group meetings and help us to interpret results."

Student qualifications and characteristics: I seek students considering studying Civil or Architectural Engineering, especially those with an interest in structural engineering. Given the type of research we do, experience with construction or tools is great - but absolutely not required. We teach you what you need to know to contribute while also being safe.

You will need to be available to work in the lab during normal business hours - it is best if you have blocks of time (at least 3 hours long) that are open during the day.

Position #: 20

Mentor name: Lin Liu linliu@ku.edu Mechanical Engineering

Remote or in-person: This would be a remote position.

Job/project title: Engineering Research on Next-generation Lithium-ion Batteries

Project description: Currently, we are supported by NASA and National Science Foundation to develop a next-generation rechargeable battery; The students will work approximately 4-7 hours per week during academic sessions in the research laboratory of Dr. Lin Liu at the KU Lawrence campus. Dr. Lin Liu research program involves electrochemistry modeling and experimentation including but not limited to batteries and fuel cells design and fabrication. The students will initially assist Dr. Liu and his graduate students in specifying, acquiring, and troubleshooting new instrumentation for the lab, and subsequently, designing experiments, performing experimentation.

Potential student tasks and responsibilities: The duties may include:

- Designing and conducting experiments involving prototypes of next-generation battery concepts, and/or novel designed biomimetic self-assembled, hierarchical nanostructure.
- Simulating batteries and fuel cells electrochemical performance during calendar life and cycle life.

- Assisting in the specification and calibration, testing, and characterizing of various instruments.

The students will also:

- Review the pertinent literature.
- Fabricate newly-design batteries or fuel cells.
- Analyze data.
- Prepare and present routine summaries and presentations (oral and written) involving literature reviews and research results.
- Help prepare scientific manuscripts for publication.
- Prepare presentations for undergraduate and graduate research competitions."

Student qualifications and characteristics:

- Excellent performance in high school math classes and an interest in engineering
- Strong oral and written communication skills.
- Strong organizational and time management skills.
- Interest in learning more about graduate-level research.
- Interest in prototyping hardware in a research setting
- Interest in possibly continuing in position through summer of 2020 and the next academic year.
- Women and minorities, and candidates who will contribute to the climate of diversity in the School of Engineering, including a diversity of scholarly approaches, are especially encouraged to apply

Position #: 21

Mentor name: John Paden paden@ku.edu Center for Remote Sensing of Ice Sheets

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Radar data analysis and programming

Project description: The Center for Remote Sensing of Ice Sheets (CRISIS) designs and develops radar systems and conducts ground based and airborne field experiments in the polar regions. The data (>1000 TB) collected by these systems over the past several decades are processed using custom signal processing and remote sensing software in a cluster computing environment. Student research assistants work with a team of engineers and scientists on a variety of research problems to understand and analyze the radar data to produce data products for the international glaciology science community.

Potential student tasks and responsibilities: Radar image analysis, programming, and geographic information system tasks which we will provide training for. Producing reports and giving presentations at group meetings.

Student qualifications and characteristics: We expect student to be

1. interested in learning about multi-disciplinary research (programming, geographic information systems, radar, ice sheets);
2. willing to work hard and hold themselves accountable to support the project objectives and tasks and to gain the technical and academic skills required to perform the research tasks

3. interested in being a part of, and contributing to, a strong and supportive team environment that respects everyone;
4. able to pay attention to the importance of coursework and self-care and balance that with the demands of the research position;
5. studying one of our core fields: electrical engineering, computer engineering, computer science, geology, or geography.

Position #: 22

Mentor name: Elaina Sutley enjsutley@ku.edu Civil, Environmental, and Architectural Engineering

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Equity-driven Infrastructure

Project description: This project, Adaptive and Resilient Infrastructures driven by Social Equity (ARISE) addresses disparities in response to extreme events that rarely consider resilience preparation and relief efforts through an equity lens. Recovery for historically underserved communities lag far behind on average. ARISE's vision is to create a new social-equity-driven paradigm for resilience analysis and a pipeline of community leaders and decision-makers who will transform how a community invests in and manages human and physical infrastructure. Using Kansas-based testbeds that span population and climate gradients, along with case studies that encompass transportation, water, and energy sectors, ARISE will build a stakeholder-informed resilience-focused research community based on: (1) a novel stochastic hetero-functional graph-theoretic (SHFGT) framework for interdependent human and physical infrastructures informed by a six-dimensional approach to measuring social equity; (2) new stakeholder relevant resilience metrics powered by novel machine-learning-based evaluation techniques; and (3) unique decision-support structures grounded in behavioral economic theories.

Potential student tasks and responsibilities: The Emerging Scholar will help create the Kansas testbeds. This will include collecting population, business and infrastructure data available online, and will help prepare and send out mailed surveys to thousands of Kansas residents. As well as contribute to the data cleaning and entry process for the returned mailed surveys.

Student qualifications and characteristics: Passion about social equity, interest in disasters like floods and tornadoes, and some competence in Microsoft Excel and online search.

Position #: 23

Mentor name: Hongyang Sun hongyang.sun@ku.edu Electrical Engineering and Computer Science

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: Characterizing and Understanding Complex HPC and Data Science Algorithms through Visualization

Project description: Many complex algorithms (e.g., involving matrices, graphs, and sequencing or combinatorics) in the field of data science and high-performance computing (HPC) are hard to understand, even for experts. Yet, their importance has been underlined by

the many use cases that rely on these algorithms to perform essential computations and data analysis. The goal of this project is to develop tools to visualize the working of these algorithms and make them easy to understand for both education and research purposes. The project involves understanding some important algorithms in the domain through the help of the faculty advisor and using simple tools such as MS Powerpoint or more sophisticated tools such as Python animation packages to create comprehensive visualization under certain guidelines. The outcome will benefit both future students learning these algorithms as well as facilitating future research around these algorithms. This is currently considered a standalone project but could be integrated into teaching or future research project of the faculty advisor.

Potential student tasks and responsibilities: The student is expected to be familiar with MS powerpoint (for creating visualizations) as well as basic maths (for understanding the algorithms). Knowledge of the programming language Python is a plus but not required for the start. The algorithms to be visualized will be conveyed to the student upon the start of the project but the faculty advisor will guide the student along the way through regular meetings.

Student qualifications and characteristics: The student is expected to be motivated, responsible, and committed to the project. Regular meeting (every week or every two weeks) with the faculty advisor in person is required.

Humanities

Position #: 25

Mentor name: Jonathan Lamb jonathanplamb@ku.edu English

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: Creating a new edition of William Shakespeare's comedy, *Love's Labour's Lost*

Project description: I am seeking a student to help me create a new scholarly edition of William Shakespeare's play *Love's Labour's Lost*. One of Shakespeare's most interesting plays (even though it is not as popular as *Romeo and Juliet* or *Hamlet*), LLL is a comedy, but unlike most comedies it does not end in marriage. Rather, it ends with a fight, an unexpected pregnancy, a death, and a love test. Most of the play consists of jokes, pranks, love sonnets, lots of wordplay, flirty banter, and one hunting party. What makes the play great is its concern with its own value as a piece of entertainment. It is a play, in short, about FUN. It is also about love, sex, gender, race, social class, language, and more.

The editing process is a complex and enjoyable one, and I am seeking 1-2 research assistants to help with the process. Not simply a “copy” of the earliest version of Shakespeare’s play, an edition requires a huge amount of research to prepare the text, add glosses, notes, and longer scholarly notes, write the long scholarly introduction, and more.

Potential student tasks and responsibilities: At every stage of the process, students can support the creation of the edition while also acquiring valuable skills, knowledge, and experience for their own aims. The team will work together to:

- Establish the play text by collating the earliest printed copies of the play with editions published in the subsequent 400+ years.
- Correct the text where there may be errors or textual cruxes. This part of the process is notoriously difficult.
- Modernize the spelling and punctuation, another notoriously controversial stage.
- Research and gloss unfamiliar terms.
- Research and compose short notes and longer scholarly notes (called “Openings”). These often require considerable research, as we seek to create new knowledge about the play and make that knowledge accessible to readers.
- Research the play’s performance history, the substantial scholarship on the play, and new avenues of inquiry. Here, I hope students will be able to develop their own research interests based on their work with the edition.
- Research and write material for the scholarly introduction.

Student qualifications and characteristics: No prior experience with *Love's Labour's Lost* is necessary, though students should be prepared to study and think about Shakespeare's play. I am looking for students who want to think hard about language and learn and do library and digital archival research. Attention to detail is extremely important! Students who want to major in a humanities field may benefit most, but I am open to students in any major.

Most of the work can be done independently, but students will be expected to attend a biweekly team meeting.

Additional Comments: This will be fun!

Position #: 26

Mentor name: Sarah Lendt arbutthno@ku.edu History of Black Writing (English)

Remote or in-person: The job requires the student to work in-person only.

Job/project title: Archive Assistant at the History of Black Writing (HBW)

Project description: The History of Black Writing’s (HBW) mission is to recover and promote writing by Black authors through a digital archive, scholarship, and public programming. HBW’s work is student-driven with a team of undergraduate and graduate students who work closely with a faculty director and project manager. HBW’s key goal is to educate and professionalize students within a collaborative environment working with advisers and mentors from inside and outside the university. Student involvement is crucial to every aspect of our project.

As an Archive Assistant, you’ll work as part of a team to process and organize a large archival collection that includes books, papers, published and unpublished manuscripts, photographs, media and more. This is a great position if you are interested in learning about one or more of the following: archive/museum studies, African American history, literary history, media history, research, organizing, cataloging, digitizing.

Potential student tasks and responsibilities: Follow specific instructions to organize and catalog the History of Black Writing archive, which will include reviewing archived media, providing transcripts, updating database spreadsheets, digitizing materials, conducting research, writing descriptions for exhibits and programs, and minor video editing.

Student qualifications and characteristics: The HBW Archive Assistant should have:

- Effective written and verbal communication skills;
- A strong motivation to learn and be mentored;
- A proactive and focused attitude;
- The capability to prioritize tasks, manage time, and meet deadlines; and
- The ability to work collaboratively within a team.

The HBW Archive Team meets weekly.

Position #: 27

Mentor name: Sarah Lendt arbutthno@ku.edu History of Black Writing (English)

Remote or in-person: The job requires the student to work in-person only.

Job/project title: Communications Assistant at the Project on the History of Black Writing (HBW)

Project description: The History of Black Writing's (HBW) mission is to recover and promote writing by Black authors through a digital archive, scholarship, and public programming. HBW's work is student-driven with a team of undergraduate and graduate students who work closely with a faculty director and project manager. HBW's key goal is to educate and professionalize students within a collaborative environment working with advisers and mentors from inside and outside the university. Student involvement is crucial to every aspect of our project.

As a Communications Assistant, you'll work as part of a team to bolster HBW's online, campus, and national/worldwide visibility through its social media strategy, websites, webinars, events, fundraising and other public outreach. This is a great public-facing position if you are interested in learning about one or more of the following: writing, research, social media, communication, journalism, media, graphic design, popular culture, outreach, analytics, website design, audio/video production and/or fundraising.

Potential student tasks and responsibilities: In this role you'll research topics, authors, books and more in African American literature past and present (sources may be online, print or our own History of Black Writing Archive). You'll then use that research to: write, edit and incorporate appropriate graphic design elements into social media content and post to various platforms; brainstorm and generate new content ideas; and create and edit videos.

Student qualifications and characteristics: The HBW Communications Assistant should have:

- Effective written and verbal communication skills;
- A strong motivation to learn and be mentored;
- A proactive and focused attitude;

- The capability to prioritize tasks, manage time, and meet deadlines; and
- The ability to work collaboratively within a team.

The HBW Communications Team meets weekly.

Position #: 28

Mentor name: Patricia Manning pwmannin@ku.edu Spanish and Portuguese

Remote or in-person: Prof. Manning envisions the job as hybrid, but the job may be done remotely if that is the student's preference. In that case, meetings with Prof. Manning will be held via Zoom.

Job/project title: Preparing an online edition of María de Zayas' short stories for students

Project description: Prof. Patricia Manning in the Department of Spanish and Portuguese is preparing an Open Educational Resource (OER) edition of several of seventeenth-century writer María de Zayas' short stories. The completed OER edition will be available online for free and will be used in 400-level Spanish literature courses at KU and likely at other institutions. The Emerging Scholar will assist in the preparation of this edition by reading Zayas' texts, noting terms that they do not understand and helping with annotations to clarify them for other students.

Potential student tasks and responsibilities: This position assumes that the Emerging Scholar is not very familiar with seventeenth-century Spanish culture. This will be an asset to the project since most of the students who will use the edition will not have much background in the time period. After an initial period of readings about seventeenth-century Spain and Spanish grammar of the era to help orient the Emerging Scholar to the field, the student will be reading Zayas' short stories and signaling points that they do not understand. The Emerging Scholar will then, with guidance from Prof. Manning, begin to research the points in need of further clarification. It is likely that much of the Emerging Scholar's initial work on the edition will be looking up terms in online Spanish dictionaries, like the *Diccionario de la Real Academia Española* and dictionaries of seventeenth and eighteenth-century Spanish. Depending on the Emerging Scholar's areas of interest, other tasks may include reading more of Zayas' short stories to help decide which texts to edit next, finding and reading secondary sources concerning topics related to the short stories, consulting seventeenth and eighteenth-century editions of Zayas' work that are available online or consulting rare books in the Spencer Research Library.

The annotation work currently is being done in Word. If more a specialized platform (such as Pressbooks) is required, training will be provided as part of the Emerging Scholar's paid work time.

Student qualifications and characteristics: The Emerging Scholar will need to have a native or near-native level of Spanish. (If you have questions about what this means and/or whether your level of Spanish would be a good fit for this position, feel free to email Prof. Manning at pwmannin@ku).

Since helping to develop explanations for terms and other elements will be an essential part of this position, it will be important that the Emerging Scholar is comfortable admitting what they

do not know and is curious enough to contribute to the research required to learn more about these elements. Also, because the job will be hybrid or entirely remote if that is the student's preference, it will be important that the student is self-motivated and has good time management skills to be able to work on their own to accomplish their assigned tasks. This job likely will be of the most interest to a student who has extensive experience with Spanish and is considering majoring or minoring in Spanish or a student with strong background in Spanish who is interested in a related field, such as History, English or Women, Gender and Sexuality Studies.

Additional Comments "Prof. Manning envisions the job as hybrid, but the job may be done remotely if that is the student's preference. In that case, meetings with Prof. Manning will be held via Zoom.

Position #: 29

Mentor name: Christopher Forth

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Fight Club Culture and the Global Far Right

Project description: This project explores the legacy of the novel/film *Fight Club* as it functions in relation to contemporary anxieties about masculinity, specifically as they are articulated in far-right politics. A central theme of *Fight Club* is alienation in the midst of modern abundance and a sense that modern consumer lifestyles leave something "missing," especially in relation to the experience of masculinity. In the face of the perceived emptiness of modern life, fighting without anger promises a dramatic experiential transformation and a lived sense of "aliveness" that borders on the religious. This is evident in the ubiquity of *Fight Club* references in social media and the memes of the "manosphere" but also in the many "real-life" fight clubs it has inspired or which have appropriated the name. The "fight club" label has been applied to underground boxing/MMA clubs around the world, with many illegal fights boldly promoting themselves on social media platforms. And, most importantly, it is frequently evoked among those connected to the global far right as an indictment of modern life and inspiration for the regeneration of white masculinity. What we might call "fight club culture" may be viewed as a kind of "revolt against the modern world," a phrase borrowed from the fascist writer Julius Evola that many far-right groups and clothing brands have adopted as a slogan.

Potential student tasks and responsibilities: The research for this project would take place almost entirely online, and student researchers would be given a variety of options for what they may wish to explore. What is broadly referred to as the online "manosphere" will be the primary focus, with special attention given to far-right or "alt-right" websites, forums, and channels. Research will be mostly restricted to Anglophone materials, which could include social media platforms from North America, Britain and Ireland, Australia/New Zealand, and South Africa. However students with proficiency in other languages may be invited to focus on relevant materials in different locations. In some cases this includes taking screenshots from relevant websites and downloading video content from YouTube, Tik Tok, and Telegram as well as more "alternative" platforms like Bitchute, Parler, etc. In others it may entail the extended exploration of one or more particularly large websites and channels, such as Return of Kings and the 21 Studios. The project is thus sufficiently broad to allow for considerable flexibility

depending on student skills and interests. Weekly or semiweekly meetings (either remote or in person) as well as careful note-taking are expected.

Student qualifications and characteristics: While students considering a major in gender studies would be ideal, anyone interested in social science or humanities disciplines should be able to do this work. Of course I will be on hand to assist as needed, but the preferred student researcher would have the maturity and sense of responsibility needed to conduct research without direct supervision while providing weekly or semiweekly updates, reports and notes.

Position #: 30 (cross-listed in Natural Sciences)

Mentor name: Rob Moyle moyle@ku.edu Biodiversity Institute

Remote or in-person: The job requires the student to work in-person only.

Job/project title: Ornithology Collection Assistant

Project description: The collection assistant works with curators and staff in the Natural History Museum on all aspects of collection management and research. We maintain a research collection of bird specimens from all over the world, and the collection assistant would help with the maintenance, growth, and organization of this collection and assist with a variety of research projects.

Potential student tasks and responsibilities: This position provides the opportunity to gain experience in some or all of the following areas: specimen preparation, collection organization, database management, field surveys, DNA sequencing, and data analysis. No prior experience is required in any of these areas.

Student qualifications and characteristics: We seek students with curiosity and an interest in the natural world. Organizational skills and attention to detail will be especially helpful in this position and will be developed on the job. Because of the nature of the responsibilities, the ability to work in 2-3 hours blocks is preferable.

Position #: 31

Mentor name: Akiko Takeyama takeyama@ku.edu CEAS - Center for East Asian Studies (Women, Gender, and Sexuality Studies)

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: Asian Experience in the Midwest

Project description: Collecting oral history narratives of Asian experiences in the Midwest, this collaborative research project contributes to better understanding of racial and geographic diversity. A research team, which consists of faculty members and graduate students across different disciplines and schools (e.g., Education, Geography, American Studies, Music, and East Asian Studies), will collect oral histories and disseminate them digitally through a web-based interactive timeline and mapping (including migration routes), digital storytelling (e.g., animation, gamified listening, etc.). In so doing, we explore what it means to be Asian and/or Asian American in the U.S. Midwest. How do Asian and Asian American individuals' stories in the region complicate existing images of Asian presence mainly in the west and east coasts? Thus, this project will complicate current Black-and-White racial discourses and the coast-

based Asian histories. It is an important subject as Asian presence in the Midwest is often invisible. It is also a timely topic as Asian Americans are the fast-growing racial or ethnic group in the U.S.

Potential student tasks and responsibilities:

- Assist faculty and graduate students to collect oral history narratives
- Transcribe collected narratives and codify them
- Create storyboard to outline narratives for storytelling
- Digitize sources and archive collected narratives (audio, video, and other materials)
- Share one's emerging scholar experience and assist Director to reach out to potential donors to support student research

Student qualifications and characteristics:

- Open-minded, non-judgmental attitudes
- Good communication skills and work ethics
- Experience in working in a team
- Familiarity with basic software and digital technologies (Word, Excel, PDF, twitter, etc.) or willing to take some online tutorials to acquire basis skills in creating, editing, and formatting collected data for analysis, presentation, and archiving
- Open to a student with any racial, ethnic, and cultural background as long as one understands the nature of the project and respects Asian people, history, and culture

Position #: 32

Mentor name: Akiko Takeyama takeyama@ku.edu "Center for East Asian Studies (Women, Gender, and Sexuality Studies)

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: CEAS Undergraduate Ambassador

Project description: Established in 1959, the Center for East Asian Studies (CEAS) has been serving as a national resource center to promote East Asian languages, cultures, and studies. The Center is federally funded by the Title VI grant. In order to further develop the Center programs in the area of student support (language tables, cultural events, fundraising for student research projects), K-12 outreach programs, and community outreach (including Japan Festival, Naka-kon animation conventions, Lawrence-Hiratsuka sister city program, cooking classes, storytelling at local libraries), the Center would like to appoint an undergraduate student to represent the Center as an undergraduate ambassador and promote the Center's missions. This position informs the emerging scholar of how such a non-profit national resource center runs as a university unit, how outreach activities are programmed and implemented, and how to promote a culturally diverse community by way of promoting East Asian languages, cultures, and studies in and outside the university.

Potential student tasks and responsibilities:

- Assist the Center director and staff to meet their missions
- Represent the Center as an undergraduate ambassador to reach out to student organizations on campus
- Plan and create promotional materials through social media

- Publish online blogs regularly to publicly engage in the topic and raise awareness
- Create, conduct, and analyze survey data collected from event attendees
- Give a company to the Center's outreach coordinator to visit local K-12 schools to interact students and educators

Student qualifications and characteristics:

- Open-minded, non-judgmental attitudes
- Good communication skills and work ethics
- Experience in working in a team
- Familiarity with basic software and digital technologies (Word, Excel, PDF, twitter, etc.) or willing to take some online tutorials to acquire basis skills in creating, editing, and formatting collected data for analysis, presentation, and archiving
- Open to a student with any disciplinary background as long as one has some knowledge about of cultural K39background of East Asia and willingly interact with East Asian communities in and outside the KU campus

Position #: 33

Mentor name: Heaven Snyder heavensnyder@ku.edu Center for Latin American and Caribbean Studies

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: Digital Materials Assistant

Project description:

Themes of interest: Latin America, Education, Languages & Cultures

Key tasks: Digitizing books, organizing digital files, editing video lectures, and writing video descriptions.

Seeking a student worker to support language courses being taught in the Center for Latin American and Caribbean studies (CLACS). Students who are interested in Latin America, education or languages and cultures overall would be ideal for this work as you'll be directly involved with helping to prepare future courses for our department.

Potential student tasks and responsibilities: Tasks include light video editing and indexing such as writing video descriptions/titles and organizing digital content. A significant portion of time would be devoted to digitizing paper materials that are used in our courses; using Adobe to edit/crop and create searchable PDFs. Digital file organization in Canvas is needed as well.

Student qualifications and characteristics: This is a hybrid position as video editing and file organization can be accomplished remotely while digitizing materials necessitates being in person to use the scanning equipment. Progress meetings can be either remote or in-person. Having Spanish language proficiency will be useful for processing certain video and book items, but it's not a necessity.

Additional Comments: Looking forward to mentor a student worker! Many skills can be gained from this work experience.

Position #: 34

Mentor name: Peter Ukpokodu ukpokodu@ku.edu African & African-American Studies

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: Masters of Modern African Drama

Project description: Africa is a multiracial and diverse continent of Arabs, Asians, Blacks, Whites, and Mixed Race. It is also a continent with three dominant cultural legacies made possible through Africa's indigenous traditions, Western colonialism, and Arabic/Islamic history. The research focuses on an aspect of culture--drama--that is shared by these three cultural legacies. My project proposes to contribute to the enrichment of global knowledge of masters of the drama and dramatic masterpieces by focusing on dramatists rooted in the African cultures and experiences. This is worth researching and making available to the public because of the absence or near-absence of such playwrights and dramatic masterpieces found and studied in a remarkable publication such as "Masterpieces of the Drama." Most of the drama and dramatists represented in that book are mostly Western drama and dramatists.

Are there dramatists in Africa and of African origin who have excelled in modern drama to be recognized as masters of the drama? Who are they and what have they published? Are their publications and contributions to the genre comparatively important enough to be included in a publication tentatively entitled, "Masters of Modern African Drama?"

Potential student tasks and responsibilities: The tasks for the student(s) will involve the following in the following stages below:

First stage: Searching data bases on African drama and dramatists available in English from the twentieth century to the present and listing the names, dates of birth (and death, if applicable), countries of origin of the playwrights and of their published plays with dates in an alphabetical order;

Second stage: Meeting with the professor to discuss and select the playwrights and the plays that will be included in the research/publication;

Third stage: Detailed research on the biography of each selected playwright and writing it up; write in your own words. When you quote, include the source of information. Meeting with the professor to discuss the biographies and next stage of the project;

Fourth stage: Reading and writing a good summary of each selected play in your own words, including the dominant issues and topics covered in each play. When you quote, include the source of information. Meeting with the professor to discuss the summaries and the next stage of the project;

Sixth stage: Working on endnotes and references, using the MLA style. Meeting with the professor to discuss the endnotes and references.

Student qualifications and characteristics:

1. The main qualification is that the student can read, comprehend what he/she/they has read, and be able to write;

2. The student is able to find information in a library data base;
3. The student is able to meet with the professor once a week for about an hour to discuss work progress or and help resolve problems (if any) encountered;
4. Have self-discipline to work on the project on his/her/their own;
5. Be curious and interested in learning about another culture or another discipline; and if already in the discipline develop interest in furthering and expanding knowledge in it."

Natural sciences

Position #: 35

Mentor name: Brian Ackley bdackley@ku.edu Molecular Biosciences

Remote or in-person: This would be an in-person position.

Job/project title: Genetic risk factors for tauopathies

Project description: The Ackley lab is interested in understanding how mutations in genes in different individuals might alter their risk for developing neurological disorders later in life. To do this we are using a genetically tractable system, *C. elegans*. By expressing disease-associated variants of the human gene tau we can induce progressive synaptic loss. We can accelerate that degeneration when we introduce mutations in a *C. elegans* gene that is similar to a human risk factor for Alzheimer's Disease. There are more than 20 known genetic risk factors for AD, and most of those genes have orthologs in *C. elegans*. We are currently working to combine the *C. elegans* with mutations in those genes with our lines expressing the tau variants. Students will contribute to the generation of these new strains of *C. elegans*.

Potential student tasks and responsibilities: Tasks and responsibilities will include preparation of media for nematode growth and conducting genetic crosses to establish the new lines of *C. elegans* for our tauopathy model. *C. elegans* are simple to maintain and have a short generation time, and therefore, this work is well within the capabilities of a student who has never done genetic work before. Over the long term, the project may expand to learning how to do confocal microscopy and synapse analysis in the newly created strains.

Student qualifications and characteristics: Students should be well organized and attentive to detail. No previous experience with *C. elegans* is required. Curiosity about neural development and neurological disorders or a professional interest in biomedical research is preferred. The lab work is done using shared resources in the lab, and therefore students should be thoughtful and willing to maintain workspaces as they find them.

Position #: 36

Mentor name: Kristine Beaty kgbeaty@ku.edu Anthropology

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Undergraduate Research Assistant

Project description: The KU Anthropological Genetics Group is seeking an undergraduate student that is interested in learning about anthropology and how genomics can be used to

answer questions about human population histories. Our group tries to answer questions about population history and migration patterns using both human and non-human genomic data, identifying the fauna recovered from archaeological sites, and examining sedimentary DNA for paleoecological construction. Undergraduate researchers become part of the research team and will learn how to effectively work with a team of researchers, basic molecular laboratory methods, as well as the ethical concerns when working in genomics.

Potential student tasks and responsibilities: Potential student tasks and responsibilities: The undergraduate research assistant (URA) will work with a group that has a diverse set of research needs. Student will be trained to properly document laboratory experiments, to extract DNA from a sample, make copies of DNA using polymerase chain reaction, and to make and run gels for gel electrophoresis. The URA may also be trained to sort and catalogue faunal remains, use a citation management software such as Zotero or Endnote, search and annotate research literature, or use a database software for managing laboratory samples or faunal remains. As a part of their training, student will learn about the research process through participation in weekly lab meetings/journal club. As the student becomes more familiar with the lab group and type of research involved, the assignment of weekly tasks will be influenced by their interests.

Student qualifications and characteristics: Interested student must be highly organized and motivated and have an interest in learning about anthropology and/or biology. Days and times for this position are flexible, but the student will need at least two 3-hour time blocks a week for laboratory training and tasks. A set schedule will be set up with the Lab Coordinator during their first meeting.

Position #: 37

Mentor name: Zarko Boskovic zarko@ku.edu Medicinal Chemistry

Remote or in-person: This would be an in-person position.

Job/project title: Synthetic chemistry assistant

Project description: Our laboratory is engaged in creating synthetic sequences that may yield biologically active molecules.

Potential student tasks and responsibilities: The lab assistant will be trained in the basic techniques in chemistry laboratory. This includes the following:

1. Performing reactions by combining reactants in suitable proportions.
 2. Monitoring the reactions analytically with several different techniques, for example, TLC, mass spectrometry, NMR, etc.
 3. Separating mixtures and purification of organic and organometallic compounds.
 4. Maintaining the lab notebook, registration of chemicals
 5. "Hands-on" on instruments, for example, UV-Vis, Fluorescence spectrophotometer, HPLC
 6. Washing glassware, NMR tubes, picking up the chemicals from Chemstore.
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 2. Monitoring the reactions analytically with several different techniques, for example, TLC, mass spectrometry, NMR, etc.
 3. Separating mixtures and purification of organic and organometallic compounds.

4. Maintaining the lab notebook, registration of chemicals
5. “Hands-on” on instruments, for example, UV-Vis, Fluorescence spectrophotometer, HPLC
6. Washing glassware, NMR tubes, picking up the chemicals from Chemstore.

Student qualifications and characteristics: Commitment of longer uninterrupted periods of time in the lab is critical for successful execution of these duties. Applicants should show aptitude for laboratory work and be attentive and focused.

Position #: 38

Mentor name: Paulyn Cartwright pcart@ku.edu Ecology and Evolutionary Biology

Remote or in-person: This would be an in-person position.

Job/project title: Laboratory Research Assistant

Project description: The Cartwright Lab investigates the evolution and development of jellyfish and their relatives. We culture several species in our lab and use molecular methods to look at genes that regulate their development and life cycle transitions. The position is for a student to assist with general lab duties including helping to take care of the animals and observe their development under different experimental conditions. The student will develop skills in caring for marine invertebrates and basic molecular lab techniques that will prepare them for conducting independent research.

Potential student tasks and responsibilities: The student would be responsible for making artificial sea water, setting up the food culture (brine shrimp), feeding the animals, washing the animal culture glassware and caring for the different species of marine invertebrates. Depending on the students engagement and interest, the student can gradually take on more responsibilities, including helping the graduate students with their experiments in molecular and developmental biology.

Student qualifications and characteristics: Students would be required to come in 3X/week (preferably MWF) for approximately two hours each time. The most successful students are those that love marine invertebrates, spend the time to observe their growth and overall health (paying attention to detail) and can reliably keep up the feeding schedule.

Position #: 39

Mentor name: Wai-Lun Chan wlchan@ku.edu Physics and Astronomy

Remote or in-person: This would be an in-person position.

Job/project title: Research Assistant on Nano-material Research

Project description: Atomically thin two-dimensional (2D) crystals have received much attention recently because their properties can be tailored by stacking different crystals together without the constraint of lattice matching found in 3D materials. This unique property provides a new way to “program” the material property to fit the particular need of different applications. However, current 2D materials fabrication methods can only produce micron-sized single crystals, which limits the potential applications of these 2D crystals. This project aim to develop methods to transfer centimeter-sized, but atomically thin 2D single crystals, on various material substrates. These 2D single crystals will be further combined with other materials such as

organic semiconductors (semiconductors made with organic molecules) to produce nano-structures with novel properties.

Potential student tasks and responsibilities: The student will combine 2D crystals with organic crystals to produce a wide range of nano-scale patterns known as the moiré pattern. The student will design procedures to obtain and transfer 2D crystals onto different material surfaces. The student will perform basic lab works such as preparing/using chemical solution, coating materials onto different substrates, and using optical microscope. Depending on the progress and the academic preparation of the student, they may also perform basic optical experiments and electrical measurements to study the crystal. The project will allow the student to learn and develop advanced nano-material fabrication techniques. The student will also have chance to operate basic optic and laser setups, and ultra-high vacuum systems. Before the beginning of the lab work, the student will be given the required lab safety training.

Student qualifications and characteristics: We are looking for students who have interests in research at the intersection of physics, chemistry and engineering; are self-motivated; can pay attention to details; have patience to perform lab works that can last for 3 – 4 consecutive hours; and can cooperate with other students in the research group. We will provide the required lab training for the student.

Position #: 40

Mentor name: Josephine Chandler josie@ku.edu Molecular Biosciences

Remote or in-person: This would be an in-person position.

Job/project title: Research assistant

Project description: The Chandler lab seeks to understand how complex behaviors like communication and cooperation evolve in bacteria. Such behaviors are considered social and studying these behaviors is part of an emerging field called 'sociomicrobiology.' Many bacteria communicate with dedicated chemical or peptide signaling molecules. These communications systems are widespread and found not only in bacteria but in animals, plants and even insects. Our lab is particularly interested in a type of communication called quorum sensing. These systems enable cell density-dependent changes in behavior (hence the term 'quorum sensing'). We study quorum sensing and how it benefits bacteria in different environments such as soil, interspecies competition, and infections. We also study how quorum sensing systems evolve in these environments.

The position is for a student to assist with general lab duties and research-related activities in the Chandler laboratory. This position will begin broadly so that the student can learn basic skills applicable to all projects from routine lab maintenance (e.g. washing dishes) to microbiological and molecular biological skills (e.g. growing bacteria, working with DNA). It is expected that, over time, the student will master these basic skills and be able to take on more responsibility and independence. It is also expected that the student will engage in the research going on in the lab and eventually transition to a more research-focused role in the lab that will be determined based on interests of the student and project availability.

Potential student tasks and responsibilities: The position would help support general lab activities by assisting with routine lab maintenance, such as washing dishes (automated dishwasher is available), making buffers, media and other lab reagents, autoclaving and disposing of lab waste, and general lab cleanup. As the position transitions to a more research-focused role, it would also involve learning and applying basic microbiological methods (growing bacterial cultures using aseptic technique), molecular methods (isolating and manipulating DNA), and other techniques specific to the particular research project.

Student qualifications and characteristics: We seek students that are interested and engaged in learning and the scientific process

1. is interested in molecular biology/microbiology
2. is available for ~2 hrs blocks several times a week (can be flexible), and available to stop by at other times briefly too.
3. will be committed and reliable with the agreed-upon schedule, and communicate changes as needed
4. is careful and detail oriented
5. is engaged and excited to learn, and comfortable asking for help
6. Is a good communicator and team player

Position #: 41

Mentor name: Jae Young Choi jaeyoung.choi@ku.edu Ecology and Evolutionary Biology

Remote or in-person: The job requires the student to work in-person only.

Job/project title: The molecular sequence and evolution of a novel telomere regulating gene

Project description: Telomeres are crucial genetic structures that protect ends of chromosome from damage and erosion. It is so important that all multicellular organisms have telomeres. Naturally, genes that maintain the telomere are highly conserved, found in both animals and plants, and these genes do not show any signs of increased evolutionary change. However, my lab has discovered an exception to this rule and discovered a potentially novel telomere maintenance gene that has in recent evolutionary time arose in the Monkeyflower (*Mimulus guttatus*). The student hired for this project will be tasked with sequencing this novel telomere gene and depending on the progress study the genes' evolutionary history.

Potential student tasks and responsibilities: This is a molecular biology project. The hired student will learn and conduct (1) basic molecular biology techniques (i.e. pipetting), (2) grow and maintain plants, (3) extracting DNA from plant samples, (4) with progress conduct molecular biology experiments (PCR and gel electrophoresis). The student will also be expected to conduct preparations for basic lab work (i.e. making solutions, autoclaving, etc)"

Student qualifications and characteristics: Student does not need any prior experience in molecular biology and this can be taught to the student. However a basic knowledge of genetics, DNA, and molecular biology (i.e. High school level advanced biology) will be required.

Prior experience in plant biology is not necessary, however any plant experience or interest in plant biology will be highly favored.

Student must also be ok with getting their hands "dirty". We will be working in the greenhouse working with soil to grow plants. Then bring them back in the lab and use chemicals and reagents to conduct experiments.

Attending weekly lab meeting (hour and half max) is required. Student must be available for at least three 2 hour blocks of time a week. The student must have attention to detail and be organized.

Position #: 42

Mentor name: Jennifer Gleason jgleason@ku.edu Ecology and Evolutionary Biology

Remote or in-person: The job requires the student to work in-person only.

Job/project title: Social behavior in a small insect

Project description: When animals encounter each other, social interactions results. Such interactions include courtship behavior, when males attempt to entice females into mating with them, and aggression between members of the same sex fighting over resources. Emerging Scholars and other undergraduates in the lab have worked on aggression and courtship behaviors in a variety of species, making new discoveries that have not been anticipated. Emerging Scholars will have flexibility in deciding which behaviors they would like to study.

Potential student tasks and responsibilities: The student will maintain cultures of the flies, sort flies for experiments, and perform experiments. All experiments will involve manipulation of the flies or environmental variables. The student will be completely trained by the advisor; thus no prior experience is needed. As the student becomes familiar with the flies and how they behave, the student will have opportunities to develop new hypotheses and then design and execute the experiments to test the hypotheses. In addition to specific experiments, the student will be expected to contribute to basic lab maintenance (such as making fly food) as all lab members are required to do.

Student qualifications and characteristics: The ideal student for this project is excited to learn about evolutionary biology and animal behavior. The student will need to have a set schedule each week, though the exact schedule is flexible. The student must be available during regular working hours for at least three two-hour blocks a week, but fewer, longer blocks are good as well. Attention to detail, organizational skills, and a willingness to ask questions will all contribute to student success. The experiments are not technically difficult but may require some trouble shooting to be executed properly. The student will need to be persistent and not easily discouraged.

Additional Comments: This project does not require any field specific knowledge or experience. All that is needed is a willingness to try and the ability to communicate with others.

Position #: 43

Mentor name: Richard Glor glor@ku.edu Ecology and Evolutionary Biology and Biodiversity Institute

Remote or in-person: The job requires the student to work in-person only.

Job/project title: Research/Collections Assistant

Project description: Students in this position will work with the herpetology collections at the KU Biodiversity Institute and Natural History Museum. KU is home to one of the largest collections of reptile and amphibians specimens in the world. The overall goals for this position will vary depending on student interests, but typically begin with basic training in collection maintenance and evolve into research projects.

Potential student tasks and responsibilities: The most important tasks for this entry-level position involve basic collections maintenance, including monitoring specimen fluid levels, inventorying new collections, reshelving previously used material, and using our specimen database. With experience, students typically move into more advanced tasks like measuring specimens and analyzing specimen data.

Student qualifications and characteristics: Students will initially be required to schedule blocks of at least 3 hours at a time during the training process. Students in this position must be responsible and follow instructions. Students who are passionate about animals and nature are particularly well-suited to this position.

Position #: 44

Mentor name: Lynn Hancock lynn@ku.edu Molecular Biosciences

Remote or in-person: This would be an in-person position.

Job/project title: Laboratory Research Assistant

Project description: The Hancock Laboratory studies the opportunistic pathogen *Enterococcus faecalis*. Nearly all land animals, including humans, harbor enterococci in their digestive tract. In healthcare settings, particularly intensive care units, enterococci are able to transition to a pathogenic state when introduced into extraintestinal sites. They are leading causes of catheter-associated urinary tract infections, bloodstream infections, and surgical site infections. The growing emergence of antibiotic-resistance exacerbates the challenge of treating patients with an enterococcal infection. The laboratory investigates how enterococci establish infection and we study cell-cell communication in the context of biofilm formation. We are also interested in identifying bacterial factors that assist in nutrient acquisition during infection.

Potential student tasks and responsibilities: We are looking for a student with an interest in Microbiology, Molecular Biology or Biochemistry. As the scholar joins our research team they will initially assist with general lab duties and maintenance, including preparing growth media for growing bacteria in the laboratory, making chemicals used by laboratory scientists and assisting with a variety of ongoing projects in the lab. Lab maintenance involves washing glassware (loading and unloading dishwasher), restocking disposable consumables, handling lab waste disposal by autoclaving and assisting senior laboratory personnel in day-to-day

operations. As the scholar develops proficiency in performing routine laboratory duties, they will transition to an independent research project.

Student qualifications and characteristics: 1) Desire to learn about the scientific enterprise; 2) Highly dependable and willingness to commit to a consistent work schedule (ideally we are looking for a student that can commit to a minimum of 2 hour blocks on work days); 3) Ability to receive and follow instructions from senior laboratory members; 4) Be a contributing member of an interactive team of laboratory scientists.

Position #: 45

Mentor name: Lena Hileman lhileman@ku.edu Ecology and Evolutionary Biology

Remote or in-person: This would be an in-person position.

Job/project title: Flower evolution in response to pollinators

Project description: The amazing diversity in flower shape and color that we see in the natural world is largely the result of evolutionary interactions between flowers and pollinators. In this project, we are studying the relationship between nectar reward and pollinator. The long-term outcomes of the project will help us understand the genes that are important for determining how nectar reward changes when species are adapted to bees as pollinators compared to hummingbirds as pollinators.

Potential student tasks and responsibilities: Emerging scholars working on this project will work at the greenhouse in Haworth Hall helping to maintain our research plant collection. In addition, they will be trained on basic microscopy techniques to measure nectary characteristics. This will include learning to use the open-source software package, ImageJ which is distributed by the National Institutes of Health and widely used for biological image analysis.

Student qualifications and characteristics: The ideal student for this project is excited to learn about evolutionary biology, genetics, microscopy and flower-pollinator interactions. They will need to have a set schedule with availability during regular working hours, though the exact schedule is flexible. The ideal student is organized and detail-oriented. They are also expected to have good communication skills, especially a very strong willingness to ask questions to ensure that tasks are carried out correctly.

Position #: 46

Mentor name: Erik Holmstrom erik.d.holmstrom@ku.edu Molecular Biosciences

Remote or in-person: This would be an in-person position.

Job/project title: Laboratory Research Assistant

Project description: The goal of our research program is to better understand how the structural and dynamic properties of proteins and nucleic acids allow them to perform their biological function. To accomplish this, we use fluorescent probes to “visualize” these biomolecules in action. The systems that we study are involved in a range of processes from viral replication to gene expression.

Potential student tasks and responsibilities: Students will actively contribute in scientific research by learning how to perform the following experimental tasks:

- Preparation of solutions and buffers required for the experiments
- Measure the absorbance and fluorescence properties of samples
- Document all of the steps associated with each experiment
- Analyze and interpret their experimental results

Student qualifications and characteristics: Students should be:
Available during normal working hours for 2-3 hour blocks of time
Familiar with the scientific method
Interested in the chemical nature of biological macromolecules
Comfortable finding creative solutions to challenging problems
Able to learn from experience (i.e., trial and error)

Position #: 47

Mentor name: Liz Koziol lizkoziol@ku.edu Kansas Biological Survey

Remote or in-person: The job requires the student to work in-person only.

Job/project title: Mycorrhizal fungi of the tallgrass prairie and beyond

Project description: The student will assist with research projects that investigate mycorrhizal fungi, which are a group of soil-borne fungi found in almost any habitat worldwide. These fungi partner with many plant species by colonizing roots and producing hyphae in the soil. Here at KU, we maintain INVAM, the largest collection of arbuscular mycorrhizal fungi in the world with 900 isolates (<https://invam.ku.edu/>). We also maintain a collection of fungi endemic to tallgrass prairie of Kansas and beyond. Generally, we are interested in plant-soil mutualisms and how microbes maintain plant community diversity and productivity. We utilize these fungi within prairie restoration experiments and in manipulative field and greenhouse experiments. Our lab is in Higuchi Hall in west campus. Our lab website represents our research well (<https://beverlab.ku.edu/research/>).

Potential student tasks and responsibilities: The position is flexible and could involve some combination of laboratory, greenhouse and/or field work. Laboratory work would include isolating, identifying, and quantifying fungal structures in the microscope, isolating root fragments for DNA amplification. Greenhouse work could include culture initiation up, monitoring, and plant and fungal harvesting. Field experiment tasks would involve monitoring plant community composition, weighing plant biomass, and assessing soil properties. Students will gain experience with the scientific method and lab techniques including plant propagation, fungal isolation, sterile technique, and many others. Many of our past undergraduate students have used their research experiences in our lab to conduct independent research projects and honors thesis projects in addition to going on to graduate school or medical school, to careers in industry as lab managers and quality control technicians, and other diverse fields.

Student qualifications and characteristics: The ideal candidate would be comfortable across a range of working environments, such as in field, dirt lab, greenhouse, and molecular laboratory settings. Our work is varied, and the ideal candidate would work well across these

varied environments. Knowledge of prairie species or mycorrhizal fungi is not necessary. Our lab has three professors, four post-doctoral scholars, six graduate students, ten undergraduate student helpers and two full-time lab technicians. Thus, the ideal candidate would work well with others. Due to this large laboratory working group, there are several different research projects that the candidate could participate on—to be determined as the student’s interests develop over time. Previous lab experience is not required. Initially, we will start off students with basic tasks under the direction of Dr. Koziol, such as weighing plant biomass and collecting fungal spores from soil, and gradually progress to more complicated tasks as the new student acquires skills. However, a willingness to learn new techniques and to operate in a sterile environment, such as a molecular space, is required. Our research is very much hands on and ideally, students would attend lab in person with blocks of time of 2 hours or more 2-4 days a week any time between 9-5 M-F.

Additional Comments: Dr. Koziol has worked with the emerging scholars program three times in recent years and is excited for the opportunity to work with new students this coming school year!

Position #: 48 (cross-listed in Social Sciences)

Mentor name: Sarah LeGresley Rush slegres@ku.edu Physics and Astronomy

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Redesigning physics courses: how do we improve student learning?

Project description: Recently there has been a push to redesign courses and the focus has primarily been on the delivery of the curriculum (course content). Students are increasingly being required to take a more active role in their learning. For example, in our introductory physics courses, instead of sitting and watching (or in many cases not watching) a lecture during class, students are required to read or watch videos before class. This allows the class time to be focused on solving problems (typically in a group environment) which is where students tend to struggle the most. Having already redesigned the delivery in many of our introductory courses, this project will focus on how redesigning the curriculum (specifically the reordering of the topics covered in courses) will impact student learning.

Potential student tasks and responsibilities:

- a. reading relevant articles related to the research (some articles will be provided and additional articles of interest can be chosen by the scholar)
- b. after reading the articles, try and determine what changes have been applied to the ordering of the physics topics
- c. determine if the changes have improved the grades, and/or attitudes and if so how was that measured (pre and post tests, student surveys, grades in courses, etc.)
- d. look at and analyze the data that we are collecting and work to find ways to present the data (presentation style might be similar to that found in the research articles)

Student qualifications and characteristics: Most important qualifications and characteristics are a willingness to work and a desire to learn! You don’t necessarily need to be good in physics or interested in education. That would likely make the job more interesting and fun but is not

required and training of the skills required will be provided. There will be a mandatory 1 hour meeting each week.

Position #: 49

Mentor name: Rebecca Lepping rlepping@kumc.edu KU Alzheimer's Disease Research Center; Hoglund Biomedical Imaging Center

Remote or in-person: This would be a remote position.

Job/project title: Brain Imaging Undergraduate Research Assistant

Project description: The Alzheimer's Disease Research Center measures cognition, disease progression, and a variety of blood and brain biomarkers every year on a group of nearly 400 older adults in order to understand and identify early markers of Alzheimer's disease and dementia. By doing this, we hope to one day prevent future disability. This project focuses on analyzing the magnetic resonance imaging (MRI) and positron emission tomography (PET) brain images we get from those older adults. We are measuring changes in brain structure, function, and pathology known to be related to dementia. Your work as an undergraduate research assistant would be to help with imaging data entry, data analysis, and data management for the project.

Potential student tasks and responsibilities: Potential tasks include:

- data entry, transferring information accurately into computer-based forms and Excel spreadsheets
- data management, organizing new data into proper folders, making sure data file names are correct, making sure data are complete
- data analysis, viewing imaging data, checking for good data quality, running analysis scripts
- documentation, keeping detailed and accurate notes about the tasks you complete, summarizing methods and results, helping with reports and manuscripts, making tables and figures
- project progress meetings with the supervisor

Student qualifications and characteristics: We're looking for someone who is interested in the brain and how it works, or someone who is interested in computer-based image analysis. You don't have to be a science major to qualify. You will be great for this position if you have good attention to detail and like to work on your own. It's best if you like working with numbers, computers, and learning new software. Don't worry if you haven't done anything like this before. We can teach you everything you need to know. But if you really don't like working with computers, this might not be the right position for you.

You will need to be able to work remotely. If you have access to a computer, we can help you set that up. We will have weekly virtual meetings to talk about the progress you are making on the project, plan for the next week's tasks, and to troubleshoot any problems that come up. We can schedule these to fit into your class schedule, but you should expect to meet every week. The rest of your hours will be on your own, although I will be available if questions come up. We will come up with a schedule together for when you will complete the rest of your hours to make time management easier.

Position #: 30 (cross-listed in Humanities)

Mentor name: Rob Moyle moyle@ku.edu Biodiversity Institute

Remote or in-person: The job requires the student to work in-person only.

Job/project title: Ornithology Collection Assistant

Project description: The collection assistant works with curators and staff in the Natural History Museum on all aspects of collection management and research. We maintain a research collection of bird specimens from all over the world, and the collection assistant would help with the maintenance, growth, and organization of this collection and assist with a variety of research projects.

Potential student tasks and responsibilities: This position provides the opportunity to gain experience in some or all of the following areas: specimen preparation, collection organization, database management, field surveys, DNA sequencing, and data analysis. No prior experience is required in any of these areas.

Student qualifications and characteristics: We seek students with curiosity and an interest in the natural world. Organizational skills and attention to detail will be especially helpful in this position and will be developed on the job. Because of the nature of the responsibilities, the ability to work in 2-3 hours blocks is preferable.

Position #: 50

Mentor name: Kristi Neufeld klneuf@ku.edu Molecular Biosciences

Remote or in-person: The job requires the student to work in-person only.

Job/project title: Study of Tumor Suppressor Proteins

Project description: Our long term goal is to determine the underlying mechanisms for growth control of normal intestinal tissue and explain how disruption of this normal state leads to tumor formation. In particular, the lab is focused on the tumor suppressor gene Adenomatous Polyposis Coli (APC), which is mutated early in the progression of most colon cancers. Our analysis of APC protein localization and function implicates APC protein as a central player in signaling pathways that control colonic epithelial cell proliferation and differentiation. Research in the lab utilizes a variety of systems: biochemistry of purified proteins, manipulation of cultured colon cells, and genetic mouse models. Students will contribute to these studies by performing general lab maintenance, while also learning molecular biology skills required to perform research.

Potential student tasks and responsibilities: The emerging scholar will assist with general lab duties and maintenance including: tissue culture incubator and hood upkeep and monitoring, liquid nitrogen tank filling, glassware/labware cleaning and autoclaving, pipet rack filling, preparation of buffers, lab stock solutions and liquid and solid growth media for growing bacteria. Once the scholar demonstrates proficiency in performing routine laboratory maintenance, they will incorporate more research-oriented activities into their job. These include DNA isolation and PCR for genotyping, basic molecular cloning and tissue culture.

Student qualifications and characteristics:

1. Dependable, reliable, with a strong work ethic.
2. Attention to detail and careful record-keeping.
3. Ability to work as part of a research team/ good communicator.
4. Available for multiple 2-hour blocks each week.
5. Curiosity about research system and eagerness to expand molecular and cancer biology knowledge.

Position #: 51**Mentor name:** Hartwin Peelaers peelaers@ku.edu Physics and Astronomy**Remote or in-person:** This position could be done remotely or in-person.**Job/project title:** Computational design of novel battery materials

Project description: We are looking for motivated undergraduate students to use advanced computational tools to simulate material properties (<http://dft.ku.edu>). The specific project aims to understand how battery electrodes work at an atomic level. We will study materials for the next-generation of batteries, with the goal of replacing Li ions with other ions. To do so, we will investigate how ions move through, and incorporate in, novel electrode materials. The obtained insights will allow to optimize battery performance.

Potential student tasks and responsibilities: The student will learn to use computational tools to simulate the ions and the electrodes. Since the actual simulations will be done on a high-performance computing cluster, the students will need to learn basic interactions with the Linux shell, and some programming in the Python language. The necessary science background will be learned on-the-fly. Tasks and responsibilities will increase with experience.

Student qualifications and characteristics: Students should be self motivated and willing to work hard to learn programming as well as new concepts in physics, chemistry, and potentially programming. An interest in these areas is required. There is no need to have advanced computing skills, but some background in computing or at least a willingness to learn how to program is necessary. Work times are flexible, and can be split in smaller time blocks over multiple days.

Position #: 52**Mentor name:** Bing Pu bpu@ku.edu Geography and Atmospheric Science**Remote or in-person:** The student can work either in person or remotely (hybrid).**Job/project title:** Air quality impacts of trans-Atlantic African dust storms

Project description: North Africa is the world's largest dust source. Each year more than 180 Tg of African dust is transported westward towards the tropical North Atlantic Ocean. During summertime, African dust plumes can propagate across the Atlantic, reaching the Caribbean Basin and southeastern U.S. High concentrations of dust particles in the atmosphere can reduce visibility and cause respiratory and cardiopulmonary diseases, adversely affecting local air quality and public health. In this project, we will examine the air quality impacts of extreme trans-Atlantic African dust storms over the U.S. and understand atmospheric circulation conditions associated with degraded air quality.

Potential student tasks and responsibilities: The job entails programming and data analysis. The student will learn how to use Python or NCAR Command Language (NCL) to process datasets in different formats (e.g., .nc, .hdf, .csv, .txt). The student will also develop skills to plot figures of meteorological and land surface fields, such as precipitation and surface winds, and conduct simple analysis with guidance. Reading related papers is another example of potential tasks that will help the student better understand the project and conduct analysis.

Student qualifications and characteristics: Students interested in climate and environmental sciences are encouraged to apply. It is expected that the student will commit at least four hours per week (work time are flexible) on the project. Ability to communicate clearly and follow instructions and attention to detail are desired. The student will meet with the mentor each week to discuss progress (in person or virtually). An ideal student should be self-motivated and willing to work hard.

Position #: 53

Mentor name: Shyam Sathyamoorthi ssathyam@ku.edu Medicinal Chemistry

Remote or in-person: This would be an in-person position.

Job/project title: Development of New Organic Reactions

Project description: Our laboratory develops new organic reactions for complex molecule synthesis. The student would work in this area. Here's my google scholar page which lists recent publications: <https://scholar.google.com/citations?user=LQui9XkAAAAJ&hl=en>

Potential student tasks and responsibilities: Students will be working in a chemistry lab in partnership with a graduate student or a postdoctoral fellow, synthesizing and characterizing compounds.

Student qualifications and characteristics:

1. Students should be interested in learning about organic chemistry.
2. They should be responsible, detail oriented, and attentive to lab safety rules.
3. They should be prepared to invest around 4-7 hours a week.

Position #: 54

Mentor name: Ward Thompson wthompson@ku.edu Chemistry

Remote or in-person: This would be an in-person position.

Job/project title: Research Assistant

Project description: Our group uses computer modeling to study the timescales for chemical reactions and other processes. A key aspect of our work is the development of new methods for predicting how the timescales change with temperature, one of the simplest ways chemists control reactions. However, chemistry classes often do not talk about how long reactions take or how the timescales are controlled by temperature (or at least not clearly). This project will involve developing media for use in courses and outreach efforts that illustrate the effects of temperature on chemical timescales. Potential products of this project could include videos,

demonstrations, computer visualizations, or laboratory experiments for use in chemistry courses and/or in presentations or hands-on interactions for school-age children.

Potential student tasks and responsibilities: This work will involve collaborating with graduate students on the design and creation of the media in addition to background computational research for the selected reactions. The student will thus be responsible for creative input as well as planning and execution of the project. This may involve working with computer visualization programs and/or chemical demonstrations under the direction of a chemistry graduate student.

Student qualifications and characteristics: This project is well-suited for a student who is self-motivated and has some interest in the communication of scientific ideas. Some experience with chemistry, e.g., enrollment in general chemistry, would be helpful, but is not essential.

Position #: 55

Mentor name: Lisa Timmons timmons@ku.edu Molecular Biosciences

Remote or in-person: The job requires the student to work in-person only.

Job/project title: Diet, stress, and gene expression

Project description: How genes are expressed and how DNA and chromosomes are protected from environmental assault are ongoing research interests of the lab. We are also interested in how essential dietary components are involved in regulating gene expression. The laboratory utilizes the organism *Caenorhabditis elegans* as a vehicle of discovery because we are able to study trafficking of molecules, derived from the diet, from cell-to-cell and organ-to-organ. Students may assist in a number of ongoing projects, some examples include: genetic analysis of RNAi mechanisms, protein over-expression and biochemical assay development, or cell biological analysis of protein localization and function.

Potential student tasks and responsibilities: The student's interests and schedule will help determine the nature of the experiments performed and the level of independence of the student. An Emerging Scholar might perform experiments involving genetic crosses, tests for the effects of dietary components (vitamins, iron) on gene expression, biochemical purification and assays of protein function, or may be involved in genetic screens. The Emerging Scholar might assist more experienced lab members with experiments, or with additional training and oversight, may perform their own hypothesis-driven experiments.

Student qualifications and characteristics: Previous experience is not required as students will receive extensive on-the-job training. We can accommodate students who lack advanced courses in biology and may not be able to comprehend our research goals at the outset. A successful student will be responsible, careful, dependable, communicative, will learn quickly, and will get along well with the rest of the group. The work schedule can be flexible; however, at the outset, the student will not be allowed to work alone; work hours must coincide with those of other lab members.

Additional Comments: We have mentored freshmen and work study students, including non-biologists, and can mentor students with programming expertise.

Position #: 56

Mentor name: Rob Unckless unckless@ku.edu Molecular Biosciences

Remote or in-person: This would be an in-person position.

Job/project title: Genomes in conflict

Project description: Organisms are constantly adapting to challenges in their environment. Less appreciated is the fact that organisms also must constantly adapt to intragenomic parasites that bias their own transmission without regard to the fitness of the host. Transposable elements are probably the best studied intragenomic parasites, but meiotic drive elements that break Mendelian laws of segregation are also ubiquitous and have the potential for catastrophic consequences to their hosts. A better understanding of the genetic mechanisms involved in meiotic drive systems would inform how they evolve, what aspects of gametogenesis they target, how the genome fights back, and how they contribute to important evolutionary processes including reproductive isolation, chromosome evolution and even extinction. Furthermore, our understanding of natural meiotic drive systems will inform the use of synthetic gene drives for pest control.

Our goal is to gain an understanding of the genes and mechanisms involved in both sex-ratio meiotic drive and resistance to drive in *Drosophila affinis* and to understand the genomic consequences of meiotic drive. Meiotic drive is loosely defined as any process that selfishly cheats during gametogenesis to produce a non-Mendelian distribution of gametes. In males, this often occurs after meiosis during spermiogenesis and is particularly striking when the driving machinery resides on a sex chromosome. This sex-ratio meiotic drive usually occurs on the X chromosome and results in males that sire mostly daughters. Sex-ratio meiotic drive is found in plants and animals. We study sex-ratio meiotic drive in *D. affinis* and previously identified an excellent candidate meiotic drive locus as well as Y chromosomes that are resistant to meiotic drive. An intriguing aspect of the *D. affinis* system is that males without a Y chromosome are fertile, and in such males, the sex-ratio X chromosome kills itself resulting in all male offspring.

Potential student tasks and responsibilities: They will learn to identify *Drosophila* species morphologically and learn about how distinguishing characteristics have important biological function. Through a series of crosses to in the lab, Scholars will identify deviations from the strongly female-biased sex ratio consistent with resistance. Scholars will then perform several crosses to determine whether resistance is Y-linked or autosomal. The level of sophistication of this project can grow with the Scholar. For example, Scholars could begin to map autosomal resistance genes.

Student qualifications and characteristics: Students should be interested in genetics and evolutionary biology, but need not have taken either class. Some ability to get around (drive a car) would be helpful, but not absolutely necessary. This project has the potential to involve field collections from Minnesota down to Texas, but that would be optional.

Position #: 57

Mentor name: Malgorzata (Maggie) Witek mwitek@ku.edu Chemistry

Remote or in-person: This would be an in-person position.

Job/project title: Biological Cells Immuno-phenotyping and Analysis in Cancer Diagnostics.

Project description: Our laboratory is evaluating the process of rare biological cell isolation using microfluidic devices and the identification of cancer cells via immunostaining. The work aims at the development of assays for detecting cancer cells in blood for disease diagnostics. The work will involve the characterization of the process of transferring released cells from a microfluidic chip to a glass slide, utilizing different architecture transfer devices.

Potential student tasks and responsibilities: The candidate will learn how to (i) grow mammalian cell cultures in the lab, (ii) isolate cancer cells in microfluidics, (iii) stain and (iv) count biological cells using tools frequently used in biology, pathology, and bioengineering laboratories. These tools will include manual and automated staining systems and fluorescence microscopy. The student is encouraged (if time permits) to attend research group meetings and help analyze and interpret the results. Successful completion of the project may result in publication.

Student qualifications and characteristics: Experience is welcomed but not necessary; however, this position requires attention to detail, good organization, and the ability to follow instructions with great care. This position will involve work in a laboratory environment and requires ability to learn and follow laboratory safety protocols. The student must be available for at least a 3-4 hour block once per week (preferentially twice a week) within the 8 am-6 pm window.

Social Sciences

Position #: 58

Mentor name: Glenn Adams adamsg@ku.edu Psychology

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Cultural Psychology Research Group

Project description: Generally speaking, the Cultural Psychology Research Group studies the relationship between sociocultural systems and psychological experience. During the next academic year, we are seeking assistance for 3 projects.

1. One project considers Cultural-Ecological Variation in Conceptions of Well-being. We asked participants in a variety of Ghanaian and US settings to provide definitions of well-being and to describe situations that would increase or decrease their well-being. We are now analyzing those situations to test hypotheses about cultural-ecological variation in experience of well-being.

2. A second project considers the implications of racial identification for conception and perception of racism. We asked participants in the US to respond to questions that assess their beliefs about racism.

3. A third project examines cultural psychological foundations of environmentalism and understandings of ecological engagement in the subfield of environmental psychology.

Potential student tasks and responsibilities: Work on all of the projects can happen remotely, off campus or in person, on campus

1. Assistants for the well-being and conception/perception of racism projects will code participant responses along a number of theoretically relevant dimensions using a framework that we have developed for the project.

2. Assistants for the environmentalism project will code journal articles using a framework that we have developed for the project.

Initially, assistants will learn skills in an apprenticeship capacity. Eventually, we anticipate that students will be able to administer the procedure on their own, without direct supervision. We will train the student to perform some basic analytic procedures. We will then encourage the student to prepare a poster reporting results of these analyses for presentation in the annual KU undergraduate research symposium or the annual KU Symposium for Undergraduate Psychology Engagement and Research.

Student qualifications and characteristics: The position requires no specific qualifications or characteristics beyond intellectual curiosity and a passion for learning how to do social science research. It would be ideal, but not absolutely a requirement, if students were available for (virtual or IRL) meetings of the Cultural Psychology Research Group.

Position #: 59

Mentor name: Jill Becker jkbecker@ku.edu Libraries

Remote or in-person: The student can work either in person or remotely (hybrid).

Job/project title: Undergraduate Student Perceptions of Plagiarism

Project description: The purpose of this project is to categorize, code, and begin to interpret undergraduate student responses to open-ended questions pertaining to academic integrity, plagiarism, self-plagiarism, and ethical communication. The open ended questions were included in a learning module meant to prepare students for an in-class discussion about academic integrity. Results of this study will help improve the learning module for future courses, and will also tell us how students interpret the value of information. The emerging scholar will be introduced to qualitative research methods including how to code and analyze open ended-responses, and assist with the interpretation of these responses from a student perspective.

Potential student tasks and responsibilities:

- Become familiar with the literature on information literacy, and student perceptions of academic integrity/plagiarism. This will include a small number of assigned readings pertinent to this study, as well as conducting additional literature searches as needed.
- Become familiar with qualitative research methods used to categorize and code open-ended responses.
- Meet with mentor to discuss readings to ensure a shared understanding of the theoretical framework for this study.
- Clean up data (open-ended responses) from Excel files exported from learning module platform.
- Assist with categorizing and coding open-ended responses.
- Assist with interpretation of open-ended responses.
- Help generate ideas to improve the learning module for future courses.

Student qualifications and characteristics:

- 1) Availability for 2-3 hour blocks of time between 9am-5pm, M-F. Exact days/times are flexible, but consistency is preferred. Some work (such as reading) can occur outside of work days.
- 2) Curious, organized, and interested in qualitative research. Experience and comfort with using Excel is preferred, but training can be provided.
- 3) Students who are interested in qualitative research methods in any field, and/or students who are interested in librarianship, teaching, and/or student success.

Additional Comments: Regarding the question above about location of the work - I selected hybrid which indicates it can be either, but what I really envision is a combination of in-person and remote. There will be times where I will need to meet in-person with the emerging scholar.

Position #: 61

Mentor name: Florence DiGennaro Reed fdreed@ku.edu Applied Behavioral Science

Remote or in-person: This would be an in-person position.

Job/project title: Training Advanced Professionalism Skills to Young Professionals

Project description: The mission of the Performance Management Laboratory is to conduct both real-world and laboratory research to train and support employees who work with vulnerable populations (e.g., people with disabilities). Because staff turnover is so high in those workplaces, identifying ways to enhance skills and ensure young professionals can perform relevant job duties is an important area of study. The overall project will target three research studies whose goals are to teach relevant professionalism skills to young professionals. The three research studies will focus on the following areas: (1) training new managers/supervisors how to navigate high-stakes, emotionally charged conversations with employees; (2) training professionals how to advocate for their workplace needs in situations where there is a power differential; and (3) training professionals public speaking skills using virtual reality.

Potential student tasks and responsibilities: Tasks will include the following:

1. Assist with running a research session (e.g., act as a supervisor or employee in a role-play scenario, set up virtual reality equipment).

2. Collect data during a research session.
3. Enter data into graphing software.
4. Help prepare training materials.

Student qualifications and characteristics: Research sessions will likely occur in 2- to 3-hour blocks of time at KU or at a community agency in Lawrence or Kansas City. Students do not need their own transportation as they could ride with a member of the research team for off-campus sessions. When sessions are not taking place, students are expected to work during business hours at agreed-upon times. Students who are interested in business, industrial-organizational psychology, organizational behavior management, or improving quality of services to people with disabilities would likely enjoy this experience.

Additional Comments: The Performance Management Laboratory is a fun, energetic team comprised of undergraduate and graduate students and a faculty member. We provide lots of training and support and are eager to mentor someone who has an interest in this area of research.

Position #: 62

Mentor name: Omri Gillath ogillath@ku.edu Psychology

Remote or in-person: This position will be done in-person.

Job/project title: Research assistant

Project description: The overall goal of the project is to collect data for research projects in the Gillath lab. Specifically, we have two projects in mind, one focusing on changes in cortisol following attachment security priming, and the second focusing on attachment security and trust in Artificial Intelligence.

Potential student tasks and responsibilities: As a research assistant (RA) in the lab, students will be in charge of preparing literature reviews, help search and create measures, run participants, pre-process data, and some would also engage in analyzing and writing-up the data for presentation and publication.

Student qualifications and characteristics: Students should plan on attending weekly lab meetings and be available for 1 hour blocks during the time students are around (9-5); Successful applicants will have attention to detail, organized, highly motivated, and interested in close relationships and their underlying mechanisms.

Position #: 63

Mentor name: Deanna Hanson-Abromeit dhansonabromeit@ku.edu Music Education & Music Therapy, School of Music

Remote or in-person: Some tasks will require the student to be in the lab, while others can be done remotely.

Job/project title: Baby-Music Intervention Research (MIR) Lab Assistant

Project description: The vision of the Baby-Music Intervention Research (MIR) lab is to represent stronger scientific inquiry for how music facilitates responsive change and builds

universal health for infants and families. The mission of the Baby-MIR lab is to build music intervention science by developing and strengthening theory, design, research, and practice of music interventions and more deeply understand the therapeutic role of music to promote developmental capacity, health and well-being for infants and their families. As a member of the Baby-MIR lab, the Emerging Scholars research assistant will contribute to a variety of related projects at various stages in the research cycle. Current projects include a large-scale literature review, development of a music intervention for newborns exposed to drugs in utero, and other music intervention studies. Several new studies are evolving. We collaborate with researchers at KU-Lawrence, KU Medical Center and Hospitals, including the Baby Lab and the Hoglund Biomedical Imaging Center, and Children's Mercy Research Institute. Learning opportunities extend into working with and learning from other researchers and disciplines involved in our projects.

Potential student tasks and responsibilities: Students will have the opportunity to be a contributing member of the lab team, one that involves several undergraduate and graduate research assistants, and work on a variety of projects focused on music interventions, primarily early intervention for infants and families. Tasks are varied based on the needs of a project but may include conducting library data base searches of relevant literature, reading and summarizing content of articles, reporting summaries to the project team, drafting manuscript and grant application sections, coding of video and/or audio recordings of clinical music therapy services, and attending weekly lab and mentor meetings. Other responsibilities may include making copies, organizing materials and other administrative tasks. This is a hybrid position. Many tasks can be done off campus as we use collaborative workspaces (e.g., Dropbox, Microsoft Teams), but other tasks will require you to be in the lab setting (e.g., analyzing data). There may also be opportunities to work directly with collaborators affiliated with our lab but in different locations.

Past Emerging Scholars have been active contributors to the project team, taken lead on several projects, conducted independent studies, and functioned as assistant project managers. Emerging Scholars are encouraged to participate in the spring Center for Undergraduate Research Symposium. Students will be required to complete human subjects training prior to involvement with clinical data. Research assistants should be able to attend and participate in weekly research lab meetings throughout the academic year, currently scheduled for 3:30 p.m. on Wednesdays.

Student qualifications and characteristics: Curiosity, attention to detail, reliability, and the ability to work independently are essential characteristics for research assistants in the baby-MIR lab. In addition, the student should be trustworthy, have strong communication skills, and maintain confidentiality of sensitive information. We value initiative and innovation, so those with a willingness to ask questions, and explore and contribute ideas are encouraged to apply. Interests in music, music therapy, medicine, psychology or other related fields are helpful. The ability to commit to 4-7 hours per week with the lab is desired; work hours can be flexible and tucked between classes and on evenings and weekends. Project tasks can be individualized to your availability and scheduled work hours; however, students must be available for the weekly research lab meetings (currently Wednesdays at 3:30), mentor meetings, and occasional project team meetings scheduled at mutually convenient times for the team. This position is hybrid as

some tasks require the research assistant to be in the lab, while others can be done from a remote location.

Additional Comments: Past Emerging Scholars have enjoyed the variety of tasks, opportunities to provide input and actively contribute to projects at various stages and be involved with researchers at various levels (undergraduates, masters, PhD and faculty). The Emerging Scholars work closely with the faculty mentor and doctoral student mentor and have some type of involvement in all projects within the lab. The lab has had Emerging Scholars from diverse backgrounds and areas of study, and we have benefited from a variety of perspectives.

Position #:64

Mentor name: Misty Heggeness misty.heggeness@gmail.com SPAA/IPSR

Remote or in-person: The job will done remotely.

Job/project title: Undergraduate Research Assistant

Project description: This is a book project on the economic status of women in the 21st century. Students would work with me collecting data, conducting literature reviews, writing summaries of research papers, and collecting media and other current events news articles on the related topic. Depending on skillset and/or willingness to learn, the student may also be involved in analyzing data.

Potential student tasks and responsibilities: Conduct searches using library resources on specified topics. Read and write summaries of research articles. Search for related current events topics and summarize relevance in relation to specified theme. Attend team meetings as necessary. Be reliable and responsible in communications with team members, including asking for guidance when task is unclear.

Student qualifications and characteristics: Independent, curious, dependable, interest in women, economics, and song lyrics (not a requirement).

Position #: 48 (cross-listed in Natural Sciences)

Mentor name: Sarah LeGresley Rush slegres@ku.edu Physics and Astronomy

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Redesigning physics courses: how do we improve student learning?

Project description: Recently there has been a push to redesign courses and the focus has primarily been on the delivery of the curriculum (course content). Students are increasingly being required to take a more active role in their learning. For example, in our introductory physics courses, instead of sitting and watching (or in many cases not watching) a lecture during class, students are required to read or watch videos before class. This allows the class time to be focused on solving problems (typically in a group environment) which is where students tend to struggle the most. Having already redesigned the delivery in many of our introductory courses, this project will focus on how redesigning the curriculum (specifically the reordering of the topics covered in courses) will impact student learning.

Potential student tasks and responsibilities:

- a. reading relevant articles related to the research (some articles will be provided and additional articles of interest can be chosen by the scholar)
- b. after reading the articles, try and determine what changes have been applied to the ordering of the physics topics
- c. determine if the changes have improved the grades, and/or attitudes and if so how was that measured (pre and post tests, student surveys, grades in courses, etc.)
- d. look at and analyze the data that we are collecting and work to find ways to present the data (presentation style might be similar to that found in the research articles)

Student qualifications and characteristics: Most important qualifications and characteristics are a willingness to work and a desire to learn! You don't necessarily need to be good in physics or interested in education. That would likely make the job more interesting and fun but is not required and training of the skills required will be provided. There will be a mandatory 1 hour meeting each week.

Position #: 66

Mentor name: Brittany Melton bmelton2@kumc.edu Pharmacy Practice

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Use of Technology in Healthcare

Project description: This program involves a set of independent research projects that examine the use of technology in healthcare, such as electronic health records and medication alerts, and how these technologies impact patient care both from a patient and provider perspective, and how healthcare providers approach patient care when using new technologies. A student would be a welcomed study member, assisting in all aspects of research, including data collection/analysis, literature synthesis, and scholarly writing.

Potential student tasks and responsibilities: A student would have a multitude of administrative and scholarly responsibilities that include data collection and chart reviews, data collection and analysis, literature review and synthesis, and development of new grants and publications. The student is not required to have prior experience with any of the listed activities, and has the possibility of being included as an author on presentations and publications produced, if interested.

Student qualifications and characteristics: The student needs to have Microsoft Office (primarily Word and Excel) and organizational skills, be responsible and accountable with data and equipment, be self-motivated to complete tasks, be detail-oriented, able to work independently when given clear instructions, and able to maintain confidentiality. The student will be required to complete training on ethical conduct of research and protection of patient data upon joining the study team. While unlikely, a trip to the University of Kansas Medical Center is possible. Some exposure to healthcare is desirable but not required. This project would be a good experience for someone interested in or curious about healthcare professions, the role of technology in healthcare, or data management.

Position #: 67

Mentor name: Erin Yosai erin.yosai@ku.edu Educational Psychology

Remote or in-person: This would be an in-person position.

Job/project title: Introduction to Psychological Clinic Research

Project description: The Center for Psychoeducational Services is a graduate training clinic on campus housed within the Department of Educational Psychology. The training clinic is used by counseling and school psychology graduate students and their supervisors to see community and campus-based clients for therapy, psychological assessment, and other activities. A lot of the clients that we work with are kids and families that have suspected learning disabilities, Autism, or ADHD.

The current research projects we are working on include creating a database of the historical testing data we've collected since the year 2000, as well as tracking new clients' data to better understand outcomes of treatment. We want to understand how the assessments we use to diagnose people correlate and predict certain diagnoses. Projects and research questions are always evolving, and if you have an interest in or question about the data yourself, we can create a study to investigate!

If you have an interest in clinical or counseling psychology graduate programs, this would be a great initial experience for you to understand how applied psychological research works!

Potential student tasks and responsibilities: Learning how to input, sort, and analyze quantitative and qualitative data into RedCap - a database used for research

Opportunity to gain a deeper understanding of psychological assessment

Researching current articles and writing research summaries (this could lead to contributing to writing research articles for publication or proposal for research presentations).

Understanding the basic methodology followed in psychological research and how to form research questions.

Professional development and mentoring by research advisor and graduate students

Student qualifications and characteristics: Organized, attention to detail, interest in psychology or working with people, collaborative, ability to meet for in-person work at least half of the hours (we work with confidential data, so you must be able to be on site for some of the work).

Position #: 68

Mentor name: Jiakun Zhang iakunzhang@ku.edu Political Science

Remote or in-person: This position could be done remotely or in-person.

Job/project title: KU Trade War Lab

Project description: The KU Trade War Lab (TWL) invites highly motivated and team-oriented undergraduate students to work on several projects studying the political economy of the US-China Trade War. Our lab provides a strong foundation for students interested in data science or graduate school in economics, political science, and/or business.

Potential student tasks and responsibilities: Specific responsibilities include:

- 1) Coding industry-issues from government reports and data entry
- 2) Researching industry associations and Congressional communications
- 3) Tracking headlines about the US-China trade war
- 4) Emailing and calling businesses for survey work
- 5) Populating spreadsheet on firm attributes using databases such as Dun & Bradstreet
- 6) Web-scraping tariff exclusions data from government websites

Student qualifications and characteristics: Student qualifications and characteristics: No prior research experience required, but interest in international economics, business, law, & politics preferred. TWL Research assistants are expected to work 4-7 hrs/week (more available during the summer) and be available for a weekly lab meeting (45-60mins).

Other preferred qualifications:

- 1) Course work in economics or statistics
- 2) Familiarity with Excel/google spreadsheets
- 3) proficiency with statistical software such as STATA or R
- 4) Course work in an East Asian language (Chinese, Japanese, or Korean)

Additional Comments: For more information about the KU Trade War Lab or the PI (Dr. Jiakun Jack Zhang): <https://sites.google.com/view/jackzhang/twl?authuser=0>

Position #: 69

Mentor name: Kathleen Zimmerman kathleen.zimmerman@ku.edu Special Education

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Effective Interventions in Special Education

Project description: The purpose of this project is to identify interventions that are effective in supporting students with disabilities in preschool and elementary classrooms. Students will have an opportunity to work on two projects: (1) looking at what we know about interventions right now and (2) testing new interventions.

Potential student tasks and responsibilities: Students will be asked to complete the following tasks: (1) looking at current articles about interventions and recording information (e.g., grade level of students, age of students, gender of students, intervention names), (2) gathering information from graphs in current articles, and (3) watching videos of classrooms. Students will be trained to complete one task at a time and will receive consistent support from the researcher to answer questions, problem solve, and celebrate when tasks are completed. Students will be asked to complete all of these tasks in an office on the Lawrence campus.

Student qualifications and characteristics: Students will be required to complete work tasks for 1.5-3 hour blocks of time in an office on campus at a time scheduled with the researcher between 8am-5pm (exact times will be created based on the student's schedule). Students will also be asked to attend a weekly meeting with the researcher (during the 1.5-3 hour work blocks). Students will be asked to schedule work times for at least 2 days a week. For example, a student may choose to work 2 hours on Tuesdays from 11am-1pm and 3 hours on Thursdays from 8-11am. Students will select work times with the researcher that work best for the student's preferences and schedule.

Qualifications: The following student characteristics are required to successfully complete these work tasks: (1) timeliness, (2) open communication, (3) attention to detail, (4) professionalism (e.g., ability to keep information confidential), (5) organization, and (6) willingness to learn new skills. Many tasks will be repetitive. No previous experience with research, understanding of research, or understanding of teaching is required. No math skills are required and students will not be asked to perform any calculations.

Interests: Students who are interested in working as an elementary school teacher, preschool or daycare teacher, job teaching children, or job working with young students with disabilities may be interested. If a student is interested in learning more about how we improve classrooms, this may also be a meaningful opportunity.

Position #: 70

Mentor name: Kathleen Zimmerman kathleen.zimmerman@ku.edu Special Education

Remote or in-person: This position could be done remotely or in-person.

Job/project title: Center for Innovation, Design, and Digital Learning

Project description: The students will support organization and creation of online content for the digital center to support the use of educational technology in institutions of higher education that train future special education teachers, occupational therapists, speech-language therapists, and occupational therapists. CIDDL creates blogs, podcasts, video tutorials, and online learning communities to highlight innovations in digital technologies. For example, we highlight how to create Google classrooms, how to utilize artificial intelligence, how to create virtual reality experiences in your teaching, and how to utilize mobile phone apps to increase productivity. Institutions of higher education across the world are targeted by the Center directors and staff to support innovation in digital technologies across the world.

Potential student tasks and responsibilities: Student tasks and responsibilities include:

- Creating content for the CIDDL website (blogs; web-design; video editing and design; podcast creation, editing, and design)
- Organizing data from users of the CIDDL website
- Formatting documents, videos, and podcasts for publication
- Attending team meetings with your supervisor
- Researching digital technologies to be highlighted by the center
- Managing data collected by CIDDL

Student qualifications and characteristics: Student qualifications and characteristics include:

- Consistent and clear communicator
- Checks and responds to email daily during the workweek
- Familiar with web-design, podcast creation, video editing preferred
- Excels with time management skills and organization