Rebel Research and Mentorship Program: Graduate Students
School of Allied Health Sciences
Cerebellar Transcranial Direct Current Stimulation (CB-tDCS) is a neuromodulation technique that improves learning of simple motor tasks. It is currently unknown whether CB-tDCS improves performance and learning of complex motor tasks, such as throwing. Furthermore, the effect of CB-tDCS on motor learning over multiple sessions is not well understood. The proposed study aims to (1) determine the effect of multi-day CB-tDCS on throwing accuracy and (2) determine the effect of multi-day CB-tDCS on inhibitory and excitatory pathways in motor cortex.

The role of the undergraduate mentee on the proposed project will be to: (1) assist in protocol development, (2) recruit participants, (3) collect data, (4) analyze data, and (5) disseminate findings. The undergraduate will become proficient in neuromodulation techniques, including TMS and tDCS, and well versed in neuromodulation research methods.
College of Education
Erdogan Kaya is a fourth year PhD. student in the Science Education Program; supervised by Dr. Hasan Deniz. Kaya is currently working on K-12 engineering education aligned with Next Generation Science Standards. For RAMP, Kaya will collaborate with a mentee on writing research oriented manuscripts. RAMP mentee will assist in data collection, data analysis, and will gain experience in writing a literature review.
The Research Project:
The research is titled “Examining the interrelations among factors related to preservice teachers’ approaches to teaching evolution”. The purpose of the study is to explore to what extent the direct and indirect relations of cognitive, affective and contextual factors explain teachers’ perceived approaches to teaching evolution. The survey will be used to collect data about participants’ acceptance of evolutionary theory, religious orientations, and teaching preferences for evolutionary theory. Based on the available literature and the survey results, a path model is proposed to explain how all these factors are related. To assess the proposed model, path analysis will be performed.

Responsibilities:
We will work together with the undergraduate student mentee throughout the project. Our responsibilities include:
- collecting data through the electronic survey
- analyzing the quantitative data
- finalizing the research proposal
- submitting the research proposal to present at a conference
- writing an article for publication.
Howard R. Hughes College of Engineering
Guidance Navigation and control of Aerospace Vehicles: We will start with a HAVE DASH II missile model and design a control law for Roll couple maneuvers using a finite time controller with high gain observer. For robustness a sliding mode or super twisting control can be used. Further work can be extended to Continuous Fixed time convergent regulator. Similar control techniques will be employed for Quadrotor UAV model and other aircraft model as well.

Undergraduate student is supposed to do a complete background Literature survey of previous recent papers in the area and tuning of the parameters for better results.
College of Liberal Arts
My research project analyzes black humor and satire. The role my mentee will serve is to assist in the dissection of satirical literature, television shows, and films; and assisting in the academic research of articles to support claims for research.
My project will focus on examination of significant others’ attendance and their influence on mental health outcomes in student athletes. The project will include examination of client satisfaction with services and intervention helpfulness. Frequency of session attendance, as well as type of significant other relationship to client will be examined. This project is unique in its nature. No previous studies have examined the influence of significant others’ attendance on athlete mental health outcomes. Undergraduate will become familiar with basic statistical procedures, constructing correlation tables, as well as learn how to create a poster in accordance with APA standards and partake in the poster presentation at a national conference. Student-mentee will assist with the manuscript creation and have an opportunity to co-author a publication in scientific journal past the RAMP program if enough is contributed to the manuscript.
Jen’s RAMP research will focus on how college students recall their life experiences with math, and how those memories are related to their own math anxiety, resilience, and academic outcomes. One major goal of this study is to understand how certain experiences might predict an individual’s pursuit of math. We hope that this research will afford us insight into what allows students to persist in math despite challenges and setbacks.

The undergraduate mentee working with Jen will become deeply familiar with relevant literature, assist with generating formal scientific hypotheses, oversee data collection, manage the dataset, and learn how to use both quantitative and qualitative data coding techniques within a mixed methods research design.

Advisor: Dr. Rachael Robnett
Our project will interrogate the American tendency to examine the biracial Black experience solely through a Black/White lens, which is remarkable given the expansive and continually growing body of discourse around the African diaspora. The silencing and erasure of Afro-Asian, Afro-Latinx, Afro-Indigenous, and Afro-African experience serves to affirm the value of and perpetuate a conversation that centers White Americans. To treat the subject with due care would require further unpacking and specification of these categories based on cultural and regional disparities; however, due to the length of time given to complete this project, my mentee and I will provide a broad vision of the multiple and varying causes and impacts of this rhetorical bias. Our examination of the discourse as manifest in literary works will ballast our production of a conference-length paper. We plan to present at MELUS and AWP and publish the work in an academic journal.
My research focuses on the effect of multilateral economic sanctions in the Middle East. The effectiveness of sanctions is often brought into questioning with opposing theories all presenting valid arguments. I am interested in examining the domestic impact on the political structure sanctioned states as well as the social, economic and political impact of rescinding those sanctions thereafter. Iran being of particular interest, I also examine Egypt, Palestine, Syria and Iraq - all of which were hit by harsh multilateral sanctions that have sometimes lasted over a decade.

For potential mentees, this project would be a good fit for anyone with broad interest in Middle Eastern politics, economy or comparative politics.
The 2016 U.S. President election brought the notion of identity politics to the forefront of voter behavior scholarship. Using the National Asian American Survey (NAAS), we test sociological and psychological approaches with a understudied vote group: Asian-American voters. We posit that sociodemographic identity will have a direct impact on the vote function of Asian American voters. The undergraduate student mentee, Karl Catarata, will be responsible for providing a theoretical background of the Asian-American voter. Upon gathering the necessary literature, we will then proceed with modeling the Asian-American vote function.
College of Sciences
The primary focus for the Lab of Comparative Biomechanics will be to demonstrate basic mechanisms of the human walking gait using a robotic test platform.

The RAMP undergraduate student will assist in the collection of walking gait data from healthy human subjects. Using this data, we will analyze and generate geometric profiles for the interactions of force and motion. We will apply the constrained solution set dictated by our geometric analysis to a legged robot with an on-board CPU that has real-time force and motion feedback.

The research we will be conducting addresses whether a geometry-based analytics can provide an updated understanding of how animals move on land. And, if this is true, can a geometry-based controller inform us on how robotics of the future can be taught to walk with limited force and motion inputs?
Greenspun College of Urban Affairs
Cassandra Boyer is a second-year Ph.D. student in Criminology and Criminal Justice. She is supervised by Dr. Emily Troshynski.

Her research interests are focused on the animal rights movement, surveillance, and eco-terrorism.

Her project for RAMP will examine perceptions of domestic terrorism, especially as it pertains to eco-terrorism.

Cassandra will mentor an undergraduate for this project, and will familiarize them with the research process, Qualtrics, and data analysis.
The title of the research project that I will be working on is called “Booze and Brawling: An Examination of Spectator Violence at Country Concerts.” This project will examine the factors surrounding violence at country concerts in Las Vegas, NV. Aspects of the location, costs of tickets, alcohol served, and nature of violence at these events will be explored through observations, interviews, archival records, and statistical analyses to come up with recommendations for reducing violence at these kinds of events.

I will work together with my mentee on all aspects of this project including the write-up of the research proposal, filing the IRB, conducting the literature review, collecting the data, analyzing the data, typing up the manuscript, designing the poster for presentation, and participating in the 46th Annual Western Society of Criminology Conference that will take place in 2019.