FEDERAL WORK STUDY: RESEARCH ASSISTANT PROGRAM
PROJECT DESCRIPTIONS
Project Title: Evaluation of Student Learning at UNCC
Mentor Name: Dr. Karen Singer-Freeman
Position: Director of Academic Planning and Assessment, Assoc. Grad School Faculty
Mentor College/Department: College of Education/ Assessment and Accreditation/ Child Development

Project Description:
Students who select this project will have the opportunity to learn about the university's goals for student learning, design questions for UNCC students about their educational experiences, talk to students about their experiences, and identify areas for improvement in teaching. They may also review student work. Students will learn about survey design and implementation, principles of education, and the interpretation of data.

Minimum Qualifications: GPA of 2.5 or above

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: New gene formation in Drosophila
Mentor Name: Dr. Rebekah Rogers
Position: Assistant Professor
Mentor College/Department: College of Computing and Informatics/ Bioinformatics

Project Description:
We are using genome sequence data to identify mutations that form new genes. We use fruit flies as a model system to study how mutations form. Insights are directly applicable to humans. The undergraduate would be responsible for analyzing data on HPC and writing code to parse results. There may be some work with fruit flies as well.

Minimum Qualifications: Must be able to use one of the modern coding languages (python, java, C++, etc.) to parse data and analyze results. Must be able to learn to implement R scripts to analyze results.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
2019-2020 OUR Federal Work Study Research Positions: Call for Projects

**Project Title:** Inflammation & Breast Cancer progression  
**Mentor Name:** Dr. Didier Drau  
**Position:** Associate Professor  
**Mentor College/Department:** College of Liberal Arts and Sciences/ Biological Sciences

**Project Description:**
The research focus will be on the relationship of immune cells and immune signals within the tumor and their effects on breast tumor growth, and migration. Within that framework, together the student and mentor will develop a project tailored to the student interest, time availability and skill set. By the end of the training the student should be familiar with the research conducted, comfortable presenting it to peers and other audience alike. In addition, the student will hone at least one technical approach to solve a scientific question/problem. Finally, the student will learn also the basis of scientific writing.

**Minimum Qualifications:** The student should have strong interest in the biomedical field and bases in biological sciences (e.g., physiology, immunology, and/or cell biology) will be viewed as a plus. Expectations are for the student to get hands-on training on current cell and molecular techniques to address a scientific question.

**Research Period:** Both Fall and Spring (2019-2020 Academic Year)
Project Title: Adaptations to Life in the Estuary: Tide-Associated Rhythms
Mentor Name: Dr. Paola Lopez-Duarte
Position: Assistant Professor
Mentor College/Department: College of Liberal Arts and Sciences/ Biological Sciences

Project Description:
In estuaries, environmental conditions change constantly over the tidal cycle. Fish and invertebrate species that live in estuaries have adapted to these daily fluctuations, which include changes in salinity and temperature. One of these adaptations is an internal, tidal timekeeper (circatidal clock) that is used to track the tidal cycle and prepare for changing conditions. The overall goal of this project is to understand the mechanisms that underlie circatidal clocks. We use a particularly charismatic group of crustaceans in the Ocypodidae family commonly known as fiddler crabs, as a model system. In coastal marshes, fiddler crabs play important roles as ecosystem engineers and as bioindicators of estuarine health in tropical, subtropical, and temperate regions around the world.

Students working on this project will have the opportunity to do field work in coastal marshes, maintain crab adults and larvae in the laboratory, observe and track animal behaviors, learn molecular techniques to measure the expression of clock genes, and work with computational tools to evaluate different types of data.

Minimum Qualifications: Students who have completed Ecology/Field Ecology and Cell Biology courses are encouraged to apply. Knowledge of aquarium care, microscope use, and image analysis software is desired. Training on different field and laboratory protocols, use of instruments, and image analysis software will be provided in the first weeks of the program.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: Mechanistic study of tumor suppressor gene PTEN in DNA metabolism

Mentor Name: Dr. Shan Yan

Position: Full Professor

Mentor College/Department: College of Liberal Arts and Sciences/ Biological Sciences

Project Description:
Dr. Shan Yan’s lab in the Department of Biological Sciences is interested in molecular mechanisms of genome integrity, including DNA replication stress, oxidative stress response, and DNA single-strand break repair and signaling, and cancer therapeutics. We have made several seminal contributions to a better understanding of genome integrity and cancer therapeutics (J Cell Biol, 2009, 184: 793-804; PNAS, 2013, 110: 10592-10597; PNAS, 2017, 114: 304-309; Cancer Res, 2017, 77: 3169-3180 Nucleic Acids Res, 2018, 46: 2479-2494). While PTEN is more commonly known for its phosphatase activity and tumor suppression, it is also responsible for chromosomal stability and DNA repair. However, it remains unknown exactly how PTEN interacts with DNA for its function in DNA metabolism. We will use biochemical, molecular and cell biology approach to elucidate the underlying mechanism of how PTEN is involved in DNA metabolism. Some former undergraduate students in the Yan lab have been accepted in several graduate and MD programs such as Duke University and University of South Carolina. We are looking for dedicated undergraduate researcher to carry out this research project: design experiments, perform experiment, and analyze data as well as report writing.

Minimum Qualifications: Biology 2130 C or above. Prior research experience in a research lab (especially protein expression and purification and immunoblotting analysis) is desired.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
**Project Title:** Development of hexacoordinate silicon complexes for organic electronic devices  
**Mentor Name:** Dr. Tom Schmedake  
**Position:** Associate Professor  
**Mentor College/Department:** College of Liberal Arts and Sciences/ Chemistry

**Project Description:**
Our research group has demonstrated that hexacoordinate silicon complexes can be used to improve the performance of organic electronic devices such as flexible displays, OLEDs (organic light emitting diodes), and organic photovoltaic cells. We will be developing new hexacoordinate complexes and studying their optical and electronic properties. A student involved in the project would be expected to synthesize and purify new complexes using chemistry techniques developed by our group. After that, the student will characterize the optical and electronic properties of the new complexes using instrumental methods that include NMR, UV-vis, and fluorescence spectroscopy. Finally, the student will work with a graduate student to incorporate the complex into organic electronic devices such as OLEDs to test the performance.

**Minimum Qualifications:** The student should have finished CHEM 1251, 1251L, 1252, and 1252 L. The first term of organic chemistry CHEM 2131, is also a pre-requisite or co-requisite for the student.

**Research Period:** Both Fall and Spring (2019-2020 Academic Year)
Project Title: Functional and chemical modifications to define immunorecognition of nucleic acid nanoparticles

Mentor Name: Dr. Kirill Afonin

Position: Associate Professor

Mentor College/Department: College of Liberal Arts and Sciences/ Chemistry

Project Description:
Therapeutic nucleic acids (TNAs) are increasingly being considered for the treatment of various diseases. Despite the recent approval by the FDA of the very first TNA therapy, several other promising candidates have been withdrawn from clinical trials due to a severe immunological reaction, the cytokine storm. Our current research project aims to study the effects of chemically and functionally modified therapeutic nucleic acid nanoparticles that offer more predictable and tunable immunorecognition.

Minimum Qualifications: Laboratory skills: PCR, in vitro transcription, assembly and characterization of nucleic acid nanoparticles, cell culture work

Research skills: computational design of nucleic acid nanoparticles

Relevant Coursework: BIOCHEM 4165 (1), NanoBioChemistry (4090/5090)

Research Period: Both Fall and Spring (2019-2020 Academic Year)
**2019-2020 OUR Federal Work Study Research Positions: Call for Projects**

**Project Title:** Microbial glycoscience  
**Mentor Name:** Dr. Jerry Troutman  
**Position:** Associate Professor  
**Mentor College/Department:** College of Liberal Arts and Sciences/ Chemistry

**Project Description:**  
Projects in the Troutman research group can involve a diverse range of research interests in the biological and chemical sciences, and are selected based on individual student interests. These projects can involve important training in microbiology, molecular biology, biochemistry, analytical chemistry, or synthetic chemistry as well as other fields and a variety of sub-fields of these disciplines. In short, all projects in the research group in these disciplines focus on understanding how complex carbohydrate polymers on the surface of bacteria can influence biology, and in the development of new chemical probes to interrogate these microbial systems.

**Minimum Qualifications:** Minimum qualification would be an A or B in CHEM 1252 or equivalent. Preference should be given to anyone with an A or B in CHEM 2131 or equivalent.

**Research Period:** Both Fall and Spring (2019-2020 Academic Year)
Project Title: Examining Untempered Social Media: A data-driven analysis of polarized conversations
Mentor Name: Dr. Siddharth Krishnan
Position: Assistant Professor
Mentor College/Department: College of Computing and Informatics/ Computer Science

Project Description:
Our research, using data-driven approaches like machine learning, network science, and web mining, aims to further the current understanding of polarized groups in online communities. We are currently focusing on understanding the structure of anti-Semitic communities in Gab (an online social media service) and how proponents of these ideas are connected and communicate with each other. Further research will extend to groups with other fringe-ideas; with the ultimate goal of understanding the mechanism by which harmful ideologies spread through social media. In light of recent events such as the Tree of Life Synagogue shooting, the mosque shooting in New Zealand, and the recent events in El Paso it is important to tackle the research questions based on such behavior using data. An undergraduate could contribute to this project by cleaning data, running and designing experiments, becoming familiarized with applicable research, and contributing new ideas to approaches to help us understand these concepts.

Minimum Qualifications: The student who can work on this project should have completed/enrolled in courses in machine learning and data mining (ITCS 3162 and ITCS 4156). The student would also have basic web mining skills in understanding, and accessing REST APIs. A basic understanding of graph theory would be useful, but is not required.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: CS Engagement Research
Mentor Name: Dr. Audrey Rorrer
Position: Research Associate Professor
Mentor College/Department: College of Computing and Informatics/ Computer Science

Project Description:
CS Engagement Research describes a suite of 8 ongoing projects for which I am currently PI. The themes across these research projects are to engage those who are typically underrepresented in computing (e.g. women, minority group students) through innovative immersive activities. The immersive activities include hands-on computing days at area middle schools, in-class activities within CCI courses, and research experiences across the country. The Research Assistant would contribute to all of these projects by conducting the following research activities: developing and testing surveys for the online platforms used, cleaning survey data and preparing for analyses, assisting in development of recruiting materials, assisting in project management tools (use of/monitoring), assisting in qualitative research data preparation (transcribing and thematic coding with a research team), and assisting with current literature reviews and creation of presentation materials (slides, websites). The undergraduate research assistant will become part of the research team of graduate students, and will be overseen by Rorrer. Mentoring will be a substantial component of this assignment with a primary goal being training and development of the student. The student will be offered the opportunity to choose from the 'project menu' to find best-fit with his/her skills and desires to learn certain research tools and methodologies.

Minimum Qualifications: Characteristics that are essential: work ethic, attention to detail, reliability, ability to ask questions and seek appropriate help as needed
Skills that are preferred: intermediate level of excel, exposure to statistics (but these can be learned/taught)

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: Building Engaging Computer Science Assignments For Improved Retention of Computer Science Majors
Mentor Name: Dr. Kalpathi Subramanian, Dr.Erik Saule
Position: Associate Professor
Mentor College/Department: College of Computing and Informatics/ Computer Science

Project Description:
Computer science tends to have significant attrition rates during the sophomore year. This project will contribute to an ongoing effort to build new assignments spanning introductory courses in computer science at the freshmen and sophomore levels. The goal is to build highly engaging software project assignments that clearly illustrates the relevance of computer science in solving current problems in social, cultural, scientific and other domains. The undergraduate student will work on building new assignments using two online data sources, WikiData(https://www.wikidata.org/wiki/Wikidata:Main_Page) and OpenStreet Map(https://www.openstreetmap.org/) in building the needed infrastructure on the server and client side for importing external data to make it easily accessible to students in introductory courses. Assignments will be built in a form that is easily adapted to different course levels and student skills/background.

Minimum Qualifications: The undergraduate student should preferably have Junior standing and must have satisfactorily completed the courses in the first two years in Computer Science. Some knowledge of server-side programming, Javascript and Database knowledge is preferable. More importantly, student should be strongly motivated to learn new languages, technologies and tools, and to complete tasks on time.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: Planning-Based Narrative Generation
Mentor Name: Dr. Julio C. Bahamon
Position: Assistant Professor
Mentor College/Department: College of Computing and Informatics/ Computer Science

Project Description:
My research focuses on the use of Artificial Intelligence techniques to automatically generate stories. This work involves a significant amount of knowledge engineering to represent story domains and software development to create and modify systems that use such knowledge and AI methods to create narratives. These narratives can be used in a multitude of applications, such as Education, Knowledge Transfer, Crime Scene Investigation and Virtual Environments. Undergraduate students can play a crucial role in this work by facilitating and expediting the creation of new story domains and developing the code used to process them. Students can also experience the complete research cycle by working alongside a Faculty member in the development and implementation of a research protocol.

Specific student duties would be as follows:
- Conduct literature searches
- Develop and maintain knowledge representations
- Develop and maintain Java code
- Assist in the development and deployment of research studies

Minimum Qualifications: - Excellent written English skills, Excellent Math proficiency, Excellent Programming skills in either Java or Python, Computer Science, B.S. major, Minimum GPA: 3.0, Has completed the following courses and earned a grade of A in all of them: ITCS 3153 - Intro to AI, ITSC 1212/L - Intro to CS 1, ITSC 1213/L - Intro to CS 2, ITSC 2214 - Data Structures and Algorithms, ITSC 1600/ITCS 2600 - Computing Professionals and ITSC 2175 - Logic and Algorithms OR MATH 1165 - Introduction to Discrete Structures.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: Self-driving cars for promoting STEM interest in K-12 students  
Mentor Name: Dr. Sterling McLeod  
Position: Lecturer  
Mentor College/Department: College of Computing and Informatics/ Computer Science

Project Description:
The goal of this project is to create a small modular self-driving car system to encourage interest in STEM topics for K-12 students. The system will consist of a set of self-driving car robots that are 1/16th the size of a typical car, and a small network of foam roads and paper signs to simulate a traffic environment. The system itself will be designed to be portable to allow the module to be taken to K-12 schools and/or museums. The students can observe the robots driving inside the environment, and there will be supplemental materials to explain how the robots are driving themselves, such as videos, posters, and/or presentations. In addition to these materials, a virtual reality application will be created to visualize the robot's sensing and perception. As a robot drives, a student can view how the robot is making sense of the environment via a virtual reality headset. Overall, this project will involve the fields of computer vision, robotics, virtual reality, visualization, and K-12 education. Undergraduate students that work on it will learn state-of-the-art algorithms from these fields and the practical tools in these fields used to create applications.

Undergraduate students will contribute to:

1) Localization - Designing and implementing algorithms to determine the robot's position on the track and to determine the robot's position in its lane. This will involve both tracking algorithms and computer vision algorithms.
2) Driving - Designing and implementing algorithms to plan a path to some destination, drive at a specific speed, follow a trajectory, stay within a lane, maintain clearance from other cars, and adapt to obstacles in the environment (other robots). This will involve robot motion planning algorithms.
3) Virtual reality visualization - Designing and implementing algorithms to render a 3D environment at 90Hz that shows raw sensing data seen by a robot in an interpretable way, shows the results of higher-level perception of the robot (classifying objects as "building", "car", etc), and/or shows the robot's path while it's driving. This component will involve 3D graphics, visualization algorithms, and UI design.

Minimum Qualifications: 1) Experience with one of the relevant programming languages: C#, Python, and/or C++ programming languages 2) Experience with the Unity 3D engine and/or with the Robot Operating System (ROS) middleware framework 3) Completed one of the relevant courses: ITCS 4150, ITCS 4152/5152, ITCS 3120

Research Period: Spring 2020 only
**Project Title:** Diversifying Dance Technique  
**Mentor Name:** Dr. Kaustavi Sarkar  
**Position:** Assistant Professor  
**Mentor College/Department:** College of Arts and Architecture/ Dance

**Project Description:**
This research project involves dance studies, cultural studies, technology studies, and digital humanities. It is a small subset of my larger project where I theorize the ontological and epistemological concerns of dance technique. I have already secured a diversity grant from the Chancellor's office to work on this project. The funds will be used to invite artists of repute for performance, interview, and documentation. In this pilot project, I want to investigate the pedagogical implications of teaching dance technique through a holistic engagement with culture and technology.

**Hypothesis:** Can technological enhancement improve a student’s dance technique?

**Research Design:** Work with two sets of student populations, one in studio and the other in lecture, with minimal experience with dance. I teach elements of dance technique to each population. The students in my studio class learn from me while the students in my lecture course learn from a Virtual Reality gaming console developed by a collaborative effort by myself, Julio Bahamon from Computer Science, and an undergraduate student Charlotte Barrett who worked in summer 2019 as CRS. Both student populations will have access to numerous videos by specialists in dance technique in order to give them visual cueing into the aesthetic. To keep the project in scope, I will focus on one dance technique called Odissi from eastern India. In the end, I test students' technical competency against my hypothesis. The hired student will work on the data collection, archiving, and management.

1. **Data Management: Digital Archiving:** Create an archive of media on Niner commons and write annotated descriptions for each one involving considerable research into artist profiles.
2. **Data Management: Laboratory experiment:** Lead a Virtual Reality gaming simulation that will provide data to analyze the question: how can VR enhance learning in dance?

**Minimum Qualifications:** The student should be able to do the following or willing to train with the professor to develop the following skills:  
1. Research skills for developing a quality archive  
2. Basic statistical skills to perform simple regression analysis  
3. Professionalism and strong work ethics since they will be working with specialists in the field, some of whom are well renowned artists  
4. Leadership qualities to be able to manage (in my presence and supervision) large student populations as mandated by the research design

**Research Period:** Both Fall and Spring (2019-2020 Academic Year)
Project Title: Empowering Teachers, Growing Students: Charlotte Teachers Institute seminars
Mentor Name: Dr. Scott Gartlan
Position: Director of Charlotte Teachers Institute
Mentor College/Department: College of Liberal Arts and Sciences/ Dean's Office, Charlotte Teachers Institute

Project Description:
This project is designed to provide an undergraduate student with an applied research experience. CTI engages in regular program evaluation activities with multiple stakeholders. Working along a mentor with experience in program evaluation, the student will learn about all aspects of evaluating a teacher professional development program. Possible areas include models of effective teacher professional development evaluation research, using logic models, identifying proximal and distal outcomes, the casual paradox in program evaluation, and differentiating among different methods of collecting and interpreting data. Existing CTI program evaluations and data collection will be used as a starting point for inquiry. Along with reviewing CTI evaluation practices, the student will be expected to read and critique articles related to the field of teacher professional development research. The student will be expected to make a contribution to CTI’s evaluation work, and thus a long-term, intensive project will be the goal of this research experience. Knowledge of basic research methods and data collection can be helpful, but not required. Additionally, the project could evaluate CTI’s Summer Research Experience for Teachers (SRET) program, which matches CTI Fellows with university scientists to conduct collaborative STEM research.

Minimum Qualifications: No research experience is required, but some research awareness is helpful.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
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Project Title: Numerical analysis of Ocean Current Turbine hydrofoil designs to be Installed in North Carolina Shores
Mentor Name: Dr. Navid Goudarzi
Position: Assistant Professor
Mentor College/Department: College of Engineering/ETCM

Project Description:
The purpose of this research is to investigate and evaluate the flow field around ocean current turbine (OCT) hydrofoils for implementation along the North Carolina shores. OCT hydrodynamics performance is dependent on flow conditions, turbine hydrofoil design and site characteristics. The questions that drive this research are: How does the experimental setup and testing differ from the real current conditions? How can these conditions change the way we select and define different design specifications? An in depth understanding of site conditions is needed to form basic design constraints. Similarity analysis will be employed to account for restrictions presented by the experimental/computational setup as compared to deep/shallow ocean conditions. Criteria for hydrofoil selection will be formed using principles of fluid mechanics, hydrodynamics, hydrofoil design principles, and environmental conditions. 3D fluid flow simulation in computational fluid dynamics (CFD) will be developed to understand and predict flow behavior around selected OCT hydrofoils; the computational boundary conditions, geometric constraints, and mesh structure will be generated. To better understand the CFD procedure in ANSYS Fluent software, preliminary CFD simulations will be conducted on simple geometries such as a cube. Simulations will then be conducted on selected hydrofoils. Each model is created using the computer-aided design (CAD) feature in ANSYS/SolidWorks. Once all the results are concluded, cross-comparison between computational results and current literature will be done for validation. Moreover, this research can be extended to utilize experimental testing and validation as well as employing novel machine learning applications in predicting velocity vector fields around the studies hydrofoils.

Minimum Qualifications: The students needs to know a CAD software (e.g. SolidWorks). He should have already taken the Fluid Mechanics course (or equivalent) and be eager to deepen his knowledge of hydrodynamics and fluid dynamics with applications in wind/ocean energy areas. Knowing Computational Fluid Dynamics (CFD) software packages (ANSYS, StarCCM, OpenFoam) is a plus; not mandatory. The student should also be willing to show commitment and responsibility to the project goals and timeline by delivering the tasks on time and following targeted deadlines for either poster/paper presentation/publication. Knowing/interest in experimental fluid dynamics (i.e. experimental testing such as water/wind tunnel testing) is a plus. Knowing or willing to learn/utilize machine learning in fluid mechanics applications is a plus.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: Reedy Creek Monitoring Study - Phase II
Mentor Name: Dr. Sandra Clinton
Position: Research Assistant Professor
Mentor College/Department: College of Liberal Arts and Sciences/ Geography and Earth Sciences

Project Description:
The Reedy Creek Restoration Study (RCRS) is a multi-year watershed-scale project focused on understanding the effects of restoration of a forested urban watershed. The overall project goals are to determine how watershed scale restoration influences (1) macroinvertebrate recovery, (2) watershed hydrology and groundwater-surface water interactions, and (3) water quality, organic matter, and sediment characteristics. This interdisciplinary project is currently focused on data collection from the now restored watershed located near UNC Charlotte. The undergraduate student would help with collecting field data spanning water samples, macroinvertebrates, and sediment samples. The student will help process water quality or macroinvertebrate samples depending on interests. Additionally, the student will learn how to collect field data from headwater streams and maintain both field and laboratory records.

Minimum Qualifications: Undergraduate students should be comfortable working in the laboratory and be familiar with basic lab safety requirements. Students should also be comfortable working outdoors in adverse conditions such as rain or hot weather and able to walk several miles carrying field gear.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
**Project Title:** Summertime Wet-bulb Temperature Extremes in the Southeast U.S.

**Mentor Name:** Dr. Jack Scheff

**Position:** Assistant Professor

**Mentor College/Department:** CLAS, Geography & Earth Sciences

**Project Description:**
Wet-bulb temperature, a basic atmospheric property that depends on both temperature and humidity, is highly correlated with human heat stress and health complications. In this project, the student will use meteorological data archives from the National Weather Service and National Climatic Data Center to quantify the spatial patterns of extreme summertime wet-bulb temperature readings across the southeastern United States. The student will also classify the broader meteorological systems that cause these events in different parts of the region.

**Minimum Qualifications:** Experience with Microsoft Excel or similar spreadsheet programs; credit in METR 1102 or ESCI 1101.

**Research Period:** Both Fall and Spring (2019-2020 Academic Year)
Project Title: Dissenting Daughters: Reformed Women’s Religious and Political Activism in Europe, 1572-1700
Mentor Name: Dr. Amanda Pipkin (Anderson)
Position: Associate Professor
Mentor College/Department: College of Liberal Arts and Sciences/ History

Project Description:
Roughly 40 years after Martin Luther’s 95 Theses sent shockwaves through Europe in 1517, the Reformed faith based on the teachings of John Calvin superseded Lutheranism and transformed the religious and political landscape of Europe. This research project seeks to highlight women’s contributions to the spread of this monumentally influential faith across Europe. Dissenting Daughters: Reformed Women’s Religious and Political Activism in Europe will detail how women played public religious and political roles within both local and international networks as authors, printers, editors, and book collectors.

For this 2019-2020 work study project, I am seeking an undergraduate research assistant to help collect and analyze research materials related to this project. During the research period, the assistant will collect data from 16th and 17th century books in my digital library, Google books, and international book catalogues. Using Excel, they will make lists of women printers, book owners, editors, and authors, and use this information to find cutting-edge ways to map and help others visualize the data they collect. This experience will teach the student valuable research skills and encourage them to find and use software to creatively display the impressive impact early modern women had on the history of the Reformation.

Minimum Qualifications: History major who has completed HIST 2600 with an A. Must be motivated to work independently and meet deadlines.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: Advancing Behavioral-Experimental Public Administration Research
Mentor Name: Dr. Zachary Mohr
Position: Assistant Professor
Mentor College/Department: College of Liberal Arts and Sciences/Political Science and Public Administration

Project Description:
The purpose of this position will be to help with the POLS Lab. Particularly, I would like a student to help me survey local government administrators about how they could use the POLS Lab. We will likely be conducting focus groups in the fall and the student may transcribe the focus groups and code them. From this we will develop a survey that will be sent out to local governments in North Carolina for purposes of figuring out how the lab can serve them. Other duties as appropriate helping with the administration of the Lab. More information about the Lab can be found here https://politicalscience.uncc.edu/experimental-lab

Minimum Qualifications: Essential skills include being able to type and use a computer. Preferred skills include basics of research design and laboratory skills.

Research Period: Spring 2020 only
Project Title: Nerve Regeneration
Mentor Name: Dr. In-Hong Yang
Position: Assistant Professor
Mentor College/Department: College of Engineering/ Mechanical Engineering

Project Description:
Using Bioelectronics technology and Disease/Organ on a chip, we will regenerate diseased or damaged nerve tissues.

Minimum Qualifications: Basic Biology lab skills,

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: Development of Physiological 3D Human Brain Models by Using Brain Decellularized Extracellular Matrix
Mentor Name: Dr. Hansang Cho
Position: Assistant Professor
Mentor College/Department: College of Engineering/ Mechanical Engineering and Engineering Science

Project Description:
Conventional culture systems rely on synthetic or natural bioinks derived from tissues, other than brains, and therefore, they lack most of necessary components in the native cerebral microenvironment. In this regard, decellularized extracellular matrices (dECM) have recently emerged as promising bioinks to combat this limitation. A recently developed porcine derived brain dECM (BdECM) will be employed to our validated microfluidic human brain model in order to recapitulate microenvironment found in human brains. Students are expected to culture human brain cells in 3D BdECM and characterize the physiological behaviors of the cells.

Minimum Qualifications: Cell culture, biomaterials, 3D bio printing

Research Period: Fall 2019 only
**Project Title:** Stress & Health  
**Mentor Name:** Dr. Jeanette Bennett  
**Position:** Associate Professor  
**Mentor College/Department:** College of Liberal Arts and Sciences/ Psychological Science

**Project Description:**
In general, my research seeks to understand the physiological mechanisms that cause chronic diseases and how individual differences affect the relationship between stress and health. In addition, we examine how behavioral interventions can holistically improve health and well-being. Currently, my lab, StressWAVES BRL, is collecting data on 3 interdisciplinary projects related to stress & health: (1) longitudinal examination of how major stressful life events influence mental and physical health of young adults - in collaboration with Dr. Canevello, a Social psychologist and interpersonal relationship expert, (2) how isometric exercise influences blood pressure and systemic blood markers of health - in collaboration with Dr. Howden in Kinesiology who is a cardio physiologist, and (3) how cognitive reappraisal ability alters the acute stress response - this study is a Health Psychology PhD dissertation.

The undergraduate student will work on any or all of these studies depending on their availability -- project #1 & 2 run in the mornings from 7am until 12pm, while project #3 runs in the afternoons from 1pm until 5pm. However, all research training will incorporate similar tasks and responsibilities such as: learning ethical research practices; biosafety training; conducting participant visits (includes informed consent); assisting with data collection, processing, and potentially analysis (depending on interest); participating in lab meetings, meeting bi-weekly one on one with me as well as having graduate students as mentors; be encouraged to present research as local and professional conferences; and opportunity to work on manuscripts with other lab members.

My lab is team oriented and creates a positive environment surrounding the research process. Graduates students are expected to mentor and engage with undergraduate researchers.

**Minimum Qualifications:**
**Required:**
1. minimum 3.3 GPA  
2. Minimum 10 hr/week  
3. Comfortable with collecting biological specimen (e.g., saliva, urine) from humans  
4. Comfortable supporting phlebotomist with blood collection  
5. Strong interpersonal skills (e.g., able to interact with strangers)  
6. Taken 1 or more statistics or methods courses and earned A's  
7. Research interest in health and well-being with a health-related and human behavior-related major (e.g., psychology, biology, kinesiology, nursing, etc.)

**Preferred:**
1. experience with excel, google docs, SPSS, Qualtrics, and Kubios  
2. Completed BIOL 1115, CHEM 1251, PSYC 2113, & PSYC 2103 and earned A's  
3. Complete hours in 3+ hour blocks of time

**Research Period:** Both Fall and Spring (2019-2020 Academic Year)
2019-2020 OUR Federal Work Study Research Positions: Call for Projects

Project Title: Body Positivity: Systematic Review, Media Analysis, and Intervention Science  
Mentor Name: Dr. Jennifer Webb  
Position: Associate Professor  
Mentor College/Department: College of Liberal Arts and Sciences/ Psychological Science

Project Description:  
This overall parent project will provide students with the opportunity to gain diverse research skills through three interrelated studies. The first will involve assisting our current team members with conducting literature searches and preparing summary tables for academic articles that will be included as part of a large systematic review of the positive body image construct known as body appreciation. The second study will involve assisting with refining the code book and actually coding body positive digital and print media for references to size inclusion, positive body image, and health featured in the magazine FabUplus. The third study will involve potentially helping to coordinate and assist with conducting a pilot digitally-mediated size inclusive yoga, health, and well-being intervention for higher-weight African American college women in collaboration with colleagues at NC A&T State University.

Minimum Qualifications: It would be preferable (though not required) if interested students have taken or are concurrently taking a statistics, general psychology, and research methods in psychology course with grades of B or higher but we will work with them and train them to bring them up to speed regardless.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: Probing Polarization: How Managing One's Emotions Contributes to Political Attitudes and Behavior
Mentor Name: Dr. Sara Levens
Position: Associate Professor
Mentor College/Department: College of Liberal Arts and Sciences/ Psychological Science

Project Description:
As part of a study funded by the National Science Foundation we are investigating the role of emotion and emotion management in social and political behavior. Undergraduate students will join an existing team of faculty and graduate and undergraduate students. Undergraduate students will learn basic theories of emotion reactivity, emotion regulation and decision making, and how to apply them to understand social media messaging and news communication. Undergraduate students will contribute to the project by coding open-ended survey responses about political news, feelings about politics, and social and behavioral reactions to political news. Undergraduate students will also research news outlets to learn the distinctive qualities of particular news sources and how they may be contributing to social and political behavior. Active mentoring will be provided from faculty and graduate students, as well as from peer undergraduate students to ensure an enriching research experience. Undergraduate students will emerge from this project with solid research skills transferable to a range of projects, a deeper understanding of the current social and political polarization and division that characterizes our country, and a greater understanding of the motivating role of emotion in our social and political behavior.

Minimum Qualifications: Undergraduate students need to have strong communication and English language skills and be conscientious with excellent attention to detail. Students also need to be organized and self-driven, as some of the work will be independent.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: Integrating Anti-Racist Content in Classrooms
Mentor Name: Dr. Tehia Starker Glass
Position: Associate Professor
Mentor College/Department: College of Education/ Reading and Elementary Education

Project Description:
Teachers were trained over the summer on how to include diverse literature in their classroom curriculum. For the fall and spring semester, we will go into classrooms and observe how teachers integrated anti-racist content in their classrooms. We will explore their experiences building and teaching the content, as well as their student’s experiences with the content.

Minimum Qualifications: Research skills, writing skills, computer skills, language skills

Research Period: Both Fall and Spring (2019-2020 Academic Year)
2019-2020 OUR Federal Work Study Research Positions: Call for Projects

**Project Title:** Form-based analysis of buildings & urban spaces of Rome  
**Mentor Name:** Dr. Jeff Balmer  
**Position:** Associate Professor  
**Mentor College/Department:** College of Arts and Architecture/ School of Architecture

**Project Description:**  
This research project involves a series of architectural case-studies, analyzing selected building and urban spaces in the city of Rome, Italy. This work is part of ongoing research project at the School of Architecture in alignment with our undergraduate semester abroad program in Rome. Students involved in this research will develop two- and three-dimensional formal analysis of selected works of architecture and urban space, working alongside and with the guidance of faculty. Students would produce accurate digital models from existing drawings and site measurements, and subsequently generate a wide range of drawings and diagrams derived through methods of formal and graphical comparative analysis. This research would aid ongoing faculty research, and would create curricular content for our students in a range of SoA courses.

**Minimum Qualifications:** Students selected for this work will require advanced digital graphics skills, including fluency in the standard modelling software used at the SoA, i.e. Rhinoceros, and related third-party digital rendering software, such as V-Ray. Advanced fluency in Adobe graphics software, chiefly Photoshop and Illustrator, is also required. Ideally, we would be looking for candidates in their 3rd or 4th years of undergraduate study at the School of Architecture. Ideally, if it were funded, the OUR Federal Work Study Research Assistant Program would permit us to support *either* one undergraduate student for 10 hours per week for both the Fall and Spring semesters, *or* two undergraduate students for 10 hours per week for the Fall semester only.

**Research Period:** Both Fall and Spring (2019-2020 Academic Year)
2019-2020 OUR Federal Work Study Research Positions: Call for Projects

Project Title: Data Provenance Analytics for Resilient Systems
Mentor Name: Dr. Tom Moyer
Position: Assistant Professor
Mentor College/Department: College of Computing and Informatics/ Software and Information Systems

Project Description:
The student will help develop a set of tests that simulate both benign and malicious activities in a server environment. These tests will be used to test analysis tools that look for anomalies in system behavior and determine corrective actions.

Minimum Qualifications: A successful student will be comfortable with the Linux command line and writing shell scripts. Programming in any language will also be useful as some tests will require the student to develop small sample applications. Familiarity with tools like Git are useful but not required.

Research Period: Both Fall and Spring (2019-2020 Academic Year)
Project Title: Examining factors influencing suicide attempts among LGBQ populations in the southeastern region of the United States

Mentor Name: Sonyia Richardson
Position: Clinical Assistant Professor
Mentor College/Department: College of Health and Human Services/ Social Work

Project Description:
This research will expand upon the study completed with a student in the Summer Undergraduate Research program which focused on factors influencing suicide attempts for LGBQ populations in a southeastern state. We will plan to expand this research to the southeastern region of the United States. This quantitative study will utilize secondary data from the Center for Disease Control, Youth Risk Behavior Survey. The student will be involved with gathering research, inputting data, learning simple analysis in SPSS, contributing to manuscript writing, and opportunities for research presentations.

Minimum Qualifications: Computer skills (Word, Google Docs, Excel); Research Skills (library database searchers), Completion of courses (Statistics)

Research Period: Both Fall and Spring (2019-2020 Academic Year)
2019-2020 OUR Federal Work Study Research Positions: Call for Projects

Project Title: Qualitative Analysis of Social Media Discussion
Mentor Name: Dr. Albert Park
Position: Assistant Professor
Mentor College/Department: College of Computing and Informatics/ Software and Information Systems

Project Description:
You will be working with data (mainly) from Social Media and investigate how being exposed to social media can change behaviors of individuals, learn about the type of discussion content that you see on social media and learn and perform basic qualitative analysis.

Minimum Qualifications: Qualitative Research Skills. Good reading and writing

Research Period: Both Fall and Spring (2019-2020 Academic Year)