# **Summer TERC Scholars Program Application** **STEM Education through a Social Justice Lens (SJL)**

Candidate Name:

Personal Pronoun (e.g., they/them, she/her, he/him, etc.):

E-mail address:

Phone Number:

Name of Academic Institution:

Academic Class (e.g., Freshman, Sophomore, etc.):

Major or Concentration (if declared):

Are you a participant/recipient of any undergraduate research training programs (e.g., MARC, RISE, WSRTP, etc.) If so, do you have any specialized summer internship requirements (e.g., summer conference attendance, specialized presentations, etc.)?

**PLEASE SUBMIT THIS APPLICATION VIA APPLICANT TRACKING SYSTEM WITH ATTACHED RESUME/CV. PLEASE ALSO VISIT THE** [**TERC SCHOLARS PROGRAM**](https://www.terc.edu/work-with-us/interships/summer-terc-scholars-program/) **ON OUR WEBSITE FOR MORE INFORMATION AND PROJECT DESCRIPTIONS OR E-MAIL** [**BENGISU\_ONAL@TERC.EDU**](mailto:bengisu_onal@terc.edu)**.**

\*\*\*You must upload both this application and your resume/CV to the applicant tracking system to be considered for this program\*\*\*

1. **Personal Statement (700 words max):** What are your academic aspirations and career goals?  What would you hope to gain from participation in the Summer TERC Scholars Program?
2. **Research Statement (700 words max):** Describe your prior research experience (if you have any).  Also, please describe your interest in STEM education (i.e. why are you interested in conducting research in STEM education)?

# **SUMMER TERC SCHOLARS PROGRAM:**

# **STEM EDUCATION THROUGH A SOCIAL JUSTICE LENS (SJL)**

PROJECT DESCRIPTIONS

*(ALL PROJECTS ARE SUBJECT TO CHANGE; THIS LIST IS TO SUPPORT YOUR INTERESTS)*

**AAMASE**

African American Young Women in Making to Engage in STEM and Entrepreneurship (AAMASE) is a project aimed to serve middle school and high school young African American women from low-income families. Through participatory design research, we engage young African American young women in making and entrepreneurship activities led by makers emphasizing STEM disciplinary practices. REU students will bring their own funds of knowledge (experiences, knowledge, and strengths that they bring and that the team will learn from) to formulate their own research question about facilitation, program implementation, or the young women experience in the program. This project is led by Principal Investigator Ken Rafanan.

**AMPED4Making**

AMPED4Making is a project designed to develop and pilot an afterschool program of mathematics-oriented design and making, infused with the core values of civil rights leader Cesar Chavez. *AMPED 4 Making* engages Latinx youth who live in the agricultural regions of the Southwest United States to develop their: 1) agency and positive identity, as makers, mathematical doers and users, and community members, 2) understanding of grade-appropriate mathematics, such as the volume and surface area of geometric shapes, within the context of informal learning projects, and 3) perceptions of how they can use mathematics, design, and making in their future lives and work. REU students will bring their own funds of knowledge (experiences, knowledge, and strengths that they bring and that the team will learn from) to formulate their own research question and will use research and storytelling to support professional development curriculum design and dissemination. This project is led by Principal Investigator Teresa Lara-Meloy.

**The Contemplative CRiT Collage (CCC) Study**

The Contemplative CRiT Collage (CCC) Study aims to develop and refine a new data collection methodology that is arts-informed and uses Critical Race Theory (CRT), Critical Disability Studies (DisCrit), and mindfulness meditation. Its intention is to aid in the mending of graduate students of color with disabilities who encounter negative experiences in STEM. It is a new approach to supporting their persistence in STEM. Expected outcomes for the study are positive, calming meditation experiences for participants; participants unveiling new insights into their own experiences in STEM; and participants helping to improve the use of CCC. An REU student on this project would be assisting with data collection (including one-on-one collage-elicitation interviews and discourse analysis of journal entries) and will be able to develop their own project related to the study. This project is led by Principal Investigator Lisette Torres-Gerald and Christina Silva.

ENHANCING AND EMPOWERING: DOING THE MATH WITH PARAEDUCATORS

This project is an implementation-research effort with PreK–3 paraeducators (non-certified classroom assistants) in two diverse urban districts: Boston Public Schools and Indianapolis Metropolitan School District Washington Township. The project will develop and test the contributions and impact of professional development activities for paraeducators, the majority of whom are people of color, as well as for math facilitators and teachers who support para work across grade levels, curricula, and schools/districts. PD activities include learning communities, instructional practice, and mentorship. The main project is funded by NSF (Award 2101425) and provides context, but the REU students will conduct original research related to but outside the scope of the main project. Students will formulate their own research questions to examine factors that support or hinder the confidence, mathematics pedagogical content knowledge, and teaching identity development and efficacy of paraeducators. This project is is led by Principal Investigator Judy Storeygard and Co-PIs Karen Mutch Jones, Audrey Martínez-Gudapakkam, and Brandon Sorge from IUPUI).

UniVRsal Access: VR Design and Research with and for Neurodivergent Learners

The goal of UniVRsal Access is to broaden participation in informal STEM learning by leveraging the affordances of virtual reality (VR) for accessible and immersive science learning, designing with and for neurodivergent learners. We:

· Co-designed the VR game Europa Prime with interns from Landmark College, a college exclusively for students who learn differently.

· Researched various VR design elements, looking at preference for and/or performance in different brightness levels, amounts of clutter, colors, and noise levels.

· Are now researching and evaluating impacts of our VR on participants’ awareness of and interest in STEM and of our design choices on how comfortable neurodivergent players are in the game.

The project ends summer 2024, so during the Summer Program, we’ll be finishing development of VR game and related assets, finalizing our research and evaluation, working on outreach and dissemination, and exploring ways to extend the impact of our efforts. A Summer TERC Scholar is invited to join us, selecting an aspect of the project and pursuing their own interests with it, building on our findings and/or exploring new directions with available assets. This project is led by Ibrahim Dahlstrom-Hakki, Jodi Asbell-Clarke, and Principal Investigator Teon Edwards.

**NATIVE STEM PORTRAITS: A LONGITUDINAL, MIXED-METHODS STUDY OF THE INTERSECTIONAL EXPERIENCES OF NATIVE LEARNERS AND PROFESSIONALS IN STEM**

Grounded in critical race theory and funds of knowledge, this longitudinal project examines the personal experiences, cultural perspectives, and systemic supports influencing Native individuals’ successful navigation through STEM higher education and into STEM careers. Data available for analysis are from surveys and photo elicitation interviews with undergraduates, graduate students, and professionals who are in biological sciences, physical sciences, or engineering. Students will formulate their own research questions to examine factors that support or hinder the persistence of Native individuals in STEM higher education and professions. This project is led by Principal Investigator (PI) Maria (Mia) Ong and co-PI Nuria Jaumot-Pascual, in collaboration with co-PI Tiffany Smith (American Indian Science & Engineering Society) and co-PI Matthew Madison (University of Georgia).

EXPLORING THE INTEGRATION OF SYSTEMS THINKING IN BIOLOGY: PARTICIPATORY PROFESSIONAL DEVELOPMENT (Project ExIST)

The ExIST project helps middle school students learn about biology and systems thinking by designing their own games in Scratch. Teachers in the project will adapt their biology curricula by developing and implementing biological systems-related activities for their own classrooms. To do so, teachers attended 4-days of professional development where they learn about systems, systems thinking, Scratch, game design, and unit planning. The project is funded by NSF (Award 2200815) and is being implemented in Maine and South Carolina. The REU students will play students’ games and analyze systems represented in the game and decisions the middle school students made while creating the game as well as students’ overall learning in the program. Also, REU students will have opportunities to formulate their own research questions to investigate student learning of systems and game design decisions. The project is led by Principal Investigator Mike Cassidy, Co-PIs Debra Bernstein and Gilly Puttick, and Project Manager Santiago Gasca.

\*\*\*PLEASE INDICATE THREE PROJECTs OF INTEREST (LIST TITLES) \*\*\*

*(We wish to best align your interests with existing projects at TERC. While we cannot guarantee you will be matched with a preferred project, we make every effort to support our students’ research and professional goals and to provide an optimal experience for students and mentors)*

Preference 1:

Preference 2:

Preference 3: