# **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.

**QUALITATIVE META-SYNTHESIS ON THE PSYCHOSOCIAL PROCESSES OF LIFE TRANSITIONS OF STUDENTS OF COLOR IN STEM GRADUATE EDUCATION (GSD)**

This project will synthesize what is known about the psychosocial development processes of life transitions for students of color in STEM graduate education, and what are the existing knowledge gaps for this topic using qualitative meta-synthesis methods.

Psychosocial development is the biological and cultural process of growth and maturation that occurs in a person’s life that involves the acquisition of language, cultural tools, and roles that vary according to cultural group and moment in time (Rogoff, 2003). Graduate education is a period in students’ lives that is full of transitions, such as applying, finding mentors, graduating, and finding a job. These transitions involve changes that require deep reflection for those experiencing them and deeply influence students' persistence in their graduate studies in STEM. In spite of this, there is a need for studies and synthesis work that focuses on understanding transition processes for graduate students in STEM. This meta-synthesis responds to this need.

This project will be a qualitative meta-synthesis that will use systematic methods to identify a comprehensive set of literature published on this topic. The purpose of conducting synthesis work is to provide efficient access to the literature, develop theory, and inform policy and practice (Ong et al., 2022). This project’s purpose is also developing new a new area expertise and developing a research agenda. We will conduct a **systematic thematic synthesis**, which uses systematic methods to identify a comprehensive set of literature and thematic analysis methods to develop meta-findings (Ong et al., 2022; Thomas & Harden, 2008).

**LEVARAGING THE AISES ARCHIVAL DATABASE:**

**MIXED METHODS STUDY ON NATIVE STEM SUCCESS (LAAD)**

*LAAD* is an Indigenous Mixed Methods study sponsored by the Spencer Foundation that combines the Advancing Indigenous People in STEM’s (AISES’s) recently developed archival database with survey and sharing circle data to explore the impact of AISES on persistence of Native students and professionals in STEM education and careers. The research team, consisting of Indigenous and non-Indigenous scholars at AISES, TERC, and the University of Arizona, is exploring the research question: **What AISES experiences influenced persistence and success in STEM of Native students and professionals as they are related to the impact on their families, communities, and Tribal Nations and with respect to their intersecting identities?** LAAD has been conducting sharing circles both in-person and virtual as well as one-on-one conversations with a subset of survey respondents and AISES members to deepen our understanding of AISES’ impact. The selected REU student may assist with data collection and/or analysis with a small set of interviews or sharing circle data.

**NeuroVivid: A MAKER EXPERIENCE THAT LEVERAGES COGNITIVE DIFFERENCES TO BUILD CAPACITY IN BRAIN-COMPUTER INTERFACES (BCI) CAREER PATHS**

NeuroVivid has been working with a team of neurodivergent youth (16-19 years old) to develop a maker camp experience for middle school neurodivergent students. The project aims to empower neurodivergent students from diverse racial and ethical backgrounds by providing them with an innovative maker experience building their own Brain-Computer Interface (BCI) devices. The project successfully ran its first camp in April of 2024 and helped students develop basic knowledge of the brain, circuits, and block coding. Students’ experiences culminated with a number of student BCI projects shared with friends and family. An REU student on this project can participate in a number of potential ways including helping with data collection at camps in the summer of 2025, supporting research on the intersectionality of participant identities, working on secondary analysis of data collected in 2024, or working on elements of the projects’ lesson plans, facilitator guides, or learning activities. The project is led by Principle Investigator Ibrahim Dahlstrom-Hakki, and participating REU students will be supported by Zachary Alstad and Tara Robillard.

**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).

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 has developed and implemented a professional development program for paraeducators, the majority of whom are women of color, as well as for math facilitators and teachers who support paras' work across grade levels and schools/districts. PD activities included investigations of curricular materials and effective instructional practices, as well as supports for using them with young learners in their classrooms. The project is funded by the National Science Foundation (Award 2101425). All data have been collected, therefore, REU students can access a range of qualitative and quantitative data--and in some cases completed analyses. However, there will be an opportunity for doing additional analysis and for looking across data sets to identify growth in multiple areas and ongoing challenges/needs.

The project will support REU students to formulate their own research questions and to examine factors that support or hinder paraeducator confidence, teaching efficacy, and mathematics pedagogical content knowledge. Findings in these areas might point toward the development of math identity and sense of teaching efficacy of paraeducators. This project is led by three Principal Investigators from TERC: Audrey Martinez-Gudapakkam, Judy Storeygard, and Karen Mutch Jones, as well as Brandon Sorge from Purdue University.

**CENTER FOR EQUITABLE FAMILY STEM LEARNING AT TERC**

**VIVIENDO MATHEMATICAS**

Led by Drs. Scott Pattison and Smirla Ramos Montañez, the Center for Equitable Family STEM Learning focuses on understanding the ways that families engage with STEM in out-of-school contexts, identifying asset-based and culturally relevant approaches to supporting family-based STEM learning, and partnering with families and community organizations to address systematic inequities in the STEM education system. We currently lead a variety of projects mostly focused on supporting multilingual families with preschool age children (ages 3-5) and early childhood educators. In one of our most recent initiatives, *Viviendo Matemáticas,* we are testing a new model for family engagement where Head Start educators and Latinx families work together to reconceptualize early math learning and disrupt power hierarchies between families and schools. We are looking for an REU scholar that is interested in supporting both the work of the Center and the Viviendo Matemáticas project. The ideal candidate would be bilingual (Spanish and English) and have shared lived experiences and cultural connections with Latinx families.

\*\*\*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: