# Summer TERC Scholars Program ApplicationSTEM Education through a Social Justice Lens (SJL)

Candidate Name:

E-mail address:

Phone Number:

Name of Academic Institution:

Academic Class (Freshman, Sophomore, etc.):

Major or Concentration (if declared):

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.

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)*

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

Lead research mentors are project investigators Drs. Maria Ong and Nuria Jaumot-Pascual of TERC. 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. 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.

**HEAD START ON ENGINEERING (HSE)**

Lead research mentors are Drs. Scott Pattison and Smirla Ramos-Montañez. This ongoing project is a research-practice collaboration focused on both understanding and supporting engineering-related interest development in early childhood for English- and Spanish-speaking low-income families. The project is developing and testing a model of early childhood STEM engagement and advancing knowledge of how the family as a system develops interest in STEM from preschool into kindergarten. Through a design-based implementation research approach, the team is iteratively refining and improving the HSE program and theory of change using ongoing feedback and data from staff, families, and partners. Embedded case study research is designed to explore program impacts on family engineering-related interest development over a longer period, as children enter kindergarten. Students will formulate research questions to examine factors regarding STEM engagement for young children and their families.

INCLUDING NEURODIVERSITY IN FOUNDATIONAL AND APPLIED COMPUTATIONAL THINKING (INFACT)

Lead research mentors include Dr. Jodi Asbell-Clarke, senior research scientist; Teon Edwards, STEM education designer; and Dr. Ibrahim Dahlstrom-Hakki, senior research scientist. INFACT is supported by the U.S. Department of Education and involves a consortium of university and nonprofit partners working with TERC to design, develop, implement, and research a comprehensive set of teaching and learning materials for grades 3–8. These materials embed scaffolds for supporting executive function in neurodiverse learners using computational thinking (CT) learning activities. Supports are implemented for attention, metacognition, and social-emotional learning, and educational data mining is used to make supports and pacing customizable for the strengths and struggles of each unique learner. The INFACT research team is also exploring the use of novel methods of research, including eye-tracking and facial recognition using web-based cameras, screen capture, and audio/video. Students will formulate research questions that inform new modes of assessment and may capture important activity from neurodiverse learners that otherwise could go unrecognized.

BROADENING PARTICIPATION IN INFORMAL STEM LEARNING FOR AUTISTIC LEARNERS AND OTHERS THROUGH VIRTUAL REALITY

The lead research mentors are Teon Edwards, STEM education designer and Dr. Jodi Asbell-Clarke, senior research scientist. This project aims to broaden participation in STEM learning by leveraging the unique affordances of VR for accessible and immersive science learning adventures, designing for and with neurodiverse learners, including learners with autism and other sensory, attention, and social issues. This project involves participatory design research and co-design with students from Landmark College, an institution exclusively serving undergraduates who learn differently, including students with learning disabilities, ADHD, and autism. The project is developing a VR STEM-learning mystery game for use by teenagers through adults, including neurodiverse players but also a broader audience. Students will formulate research questions to interrogate how these supports in the game impact engagement, and how engagement impacts players’ awareness of and interest in STEM. This study will include a broad range of learners and disaggregate the data into groups of learners with and without a neurodiversity-related diagnosis. Testing and data collection will occur at a variety of ISE sites, including the Boston Museum of Science and the Pacific Science Center.

ENHANCING AND EMPOWERING: DOING THE MATH WITH PARAEDUCATORS

The lead research mentor is Audrey Martínez-Gudapakkam. 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.

\*\*\*PLEASE INDICATE TWO 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: