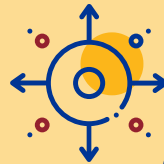![USC Viterbi School of Engineering K-12 STEM Center logo]

SHINE
Summer High School Intensive in Next-Generation Engineering

Member of the STEM PUSH Network, an NSF INCLUDES Alliance

USC's Summer High School Intensive in Next Generation Engineering (SHINE) is a seven-week summer program where students are exposed to top-quality research practices. SHINE students become part of the research team with a faculty member and learn specific lab skills from their Ph.D. student mentors. Each student conducts specific and varied tasks that contribute to the research projects of the team under the one-on-one direction of their mentor for 20 hours/week.

Students receive an overview of the process of how researchers plan, implement an intervention, analyze and disseminate the results. SHINE students gain research-specific skills, people skills, content knowledge, confidence, and perspective about how their current STEM courses are precursors to a future of real-world problem solving through research.

SHINE emphasizes & develops several targeted outcomes, including:

- Familiarity with the engineering research process
- Data implementation & analysis
- Collaboration & communication skills
- Connections between STEM content & real-world experiences
- Awareness of college application & financial aid processes

Students demonstrate these skills through presenting a research poster.

About the STEM PUSH Network

STEM PUSH, an NSF INCLUDES Alliance, is a national network of pre-college STEM programs who are engaging youth historically underrepresented in STEM to learn & do in-depth, authentic science, and ultimately to persist in STEM through college & beyond. More information available at stempushnetwork.org.

Program Features

Engineering
STEM Focus

Seven week
summer program

50-60 students served each year

51% of participants receive a full or partial scholarship to attend SHINE

86% of scholarship recipients identify as Latina/o/e or Black

Program Results

After participating in SHINE...

100% of alum feel confident in their ability to communicate scientific or technical ideas

90% feel confident in their ability to contribute to a research investigation

82% feel proficient in analyzing the limitations of data

Alumni have attended institutions including:

- Brown University
- CalTech
- Cornell University
- Georgia Tech
- Harvard University
- Johns Hopkins University
- MIT
- Princeton University
- Stanford University
- UC Berkeley
- UCLA
- University of Chicago
- University of Southern California
- Yale University

SHINE provides college support for alumni:

- Admissions workshops
- Application support
- Deadline notifications
- Resources & tips shared

26% of applicants were selected to participate in SHINE in 2022

Technical skills

such as **MATLAB, Python, Simulink, Excel, ANSYS, SOLIDWORKS, and CAD**, are refined throughout SHINE programming

SHINE at USC

SHINE students gain research-specific skills, content knowledge, communication skills, confidence, and perspective about how STEM courses are precursors to a future of real-world problem solving through research. The curriculum includes sessions where students learn about scholarly literature, STEM career paths, college admission, and more.

SHINE incorporates mentorship to guide students as they complete the program with study halls, workshops, and sessions for first generation students.

SHINE was established in 2015 at the USC Viterbi School of Engineering. In 2019, SHINE became a part of the K-12 STEM Center and incorporated the STEM Center's missions of diversity equity and inclusion as a part of SHINE student recruitment and support. The K-12 STEM Center received a 2022 Inspiring Programs in STEM award from INSIGHT into Diversity.

> *Working in a robotics lab has definitely given me an advantage in my [college] engineering class both because of the hands-on circuit/programming experience, but also in the creative problem solving that both environments require.*
>
> –2020 SHINE Alumna

SHINE students collaborate with USC Viterbi labs to conduct computational and experimental research focused on one of the following areas of engineering:

- Aerospace
- Biomedical
- Chemical
- Civil
- Computer Science
- Electrical
- Environmental
- Industrial & Systems
- Materials Science
- Mechanical
- Robotics

Connect with SHINE!

Contact Monica Lopez at k12stem1@usc.edu to schedule a visit.

More information about SHINE is available at viterbik12.usc.edu/shine.

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