

**Equity and Inclusion in STEM Thought Leaders' Summit and
Advanced Technological Education (ATE) Conference Opportunity**

1. Institution

Institution name: Mt. San Antonio College (Mt. SAC)

City: Walnut

State: CA

2. Is your college officially designated as any of the following? Check all that apply.

- ☐ Historically Black Colleges and Universities
- ☐ Predominately Black Institution
- ☒ Hispanic-Serving Institution
- ☐ Tribal College
- ☐ Alaska Native-Serving Institution
- ☐ Native Hawaiian-Serving Institution
- ☒ Asian American and Native American Pacific Islander-Serving Institution
- ☐ Native American-Serving Nontribal Institution
- ☐ Appalachian
- ☐ Rural
- ☐ None of the above

3. Faculty team member contact information

First name: Lisa

Last name: Morales

Title: Professor, Mathematics

Address: 1100 N Grand Ave

City, state, zip: Walnut, CA 91789-1399

Phone: (909) 274-5782

Email: lmorales73@mtsac.edu

4. Administrator team member contact information

First name: Matthew

Last name: Judd

Title: Dean, Natural Sciences

Address: 1100 N Grand Ave

City, state, zip: Walnut, CA 91789-1399

Phone: (909) 274-4711

Email: mjudd@mtsac.edu

5. College STEM program area of focus

- ☐ Agriculture, environment, and natural resources
- ☐ Biotechnology

- ☐ Chemical processing and refining technology
- ☐ Energy production and energy efficiency
- ☐ Engineering technology
- ☐ Geospatial technology
- ☐ Information and communication technology
- ☐ Information assurance, secure logistics, and forensics
- ☐ Manufacturing technology
- ☐ Micro and nanotechnologies
- ☒ Teacher preparation

6. Has your institution ever received a National Science Foundation Advanced Technological Education (ATE) grant?

- ☒ Yes
- ☐ No

7. If yes, please indicate when your institution received a National Science Foundation Advanced Technological Education (ATE) grant.

April 18, 2000

Award Number: DUE-0053307

Histologic Technician Education Program

May 9, 2003

Award Number: DUE-0302942

Regional Information Systems Security Center: A Consortium for Security Education, Training, and Services

June 17, 2003

Award Number: DUE-0302944

Establishing a Chemical Laboratory Technician Program at Mt. San Antonio College

September 19, 2007

Award Number: DUE-0703001

Regional Information Systems Security Center (RISSC)

February 10, 2011

Award Number: DUE-1115907

Promoting STEM Research to College Freshmen and Sophomores

October 13, 2011

Award Number: DUE-1104278

CyberWatch West

July 5, 2014

Award Number: DUE-1400650

Mt. SAC STEM Teacher Preparation Program (STEM TP2)

8. Please provide three main challenges your college is facing in its STEM program development, improvement, and/or implementation efforts. (350 words or less)

Mt. San Antonio College (Mt. SAC) faces a challenge in recruiting underrepresented students into STEM disciplines. In particular, math anxiety frequently deters students who are otherwise interested in pursuing STEM majors. These students often lack confidence and self-efficacy in math. Historically, compounding this issue was a significant number of students placing into developmental math. Students demonstrated low persistence rates moving through the developmental math sequence in preparation for STEM majors, which impeded their timely degree completion.

Faculty have recognized the need to improve equity in access and have begun implementing strategies to address this need. In California, Assembly Bill (AB) 705, which took effect on January 1, 2018, reinforced this demand. AB 705 requires community colleges to implement changes that increase the likelihood that students will complete transfer-level coursework in English and math within a one-year timeframe. Mt. SAC has shifted to using multiple measures in student placement, only placing students into developmental math if the students' high school coursework indicates that such placement is necessary. While this shift presents an incredible opportunity for Mt. SAC and our students, it also presents a challenge to improving student success in this new accelerated environment.

Faculty professional development is another challenge to STEM program improvement. With the passage of AB 705, colleges must move quickly to change not only the way they place students but also the way they teach and support students. Some Mt. SAC math faculty are resistant to these changes. Professional development in pedagogical strategies and the contextualization of math curriculum to STEM technician programs (and non-STEM disciplines) is a significant need. In addition, Mt. SAC must cultivate faculty interest and involvement in encouraging the pursuit of STEM degrees among students, particularly those underrepresented in the STEM fields.

A specific challenge to the area of teacher preparation is promoting STEM teaching as a viable career option to those students pursuing STEM degrees. Recently, Lisa Morales and other STEM faculty have visited STEM classrooms to promote interest in teaching as a profession. We need to expand this targeted outreach to encourage STEM majors to seriously consider a career in teaching.

9. What information about promising practices and strategies from other colleges and the ATE community would assist your college in addressing challenges in STEM program development, improvement and/or implementation efforts? (350 words or less)

Mt. SAC's challenges are not unique, and we would benefit greatly from the network of colleges, faculty, and administrators that the ATE community provides. We have had previous success with ATE grants, but Dean Matthew Judd and Professor Lisa Morales are new to the grant seeking process. They both would benefit personally and professionally from attending the summit/conference, and they are eager to implement effective practices and innovative ideas upon their return to campus.

To address the challenge of student recruitment into STEM disciplines, particularly into STEM teaching, we would like to learn about successful outreach and marketing strategies that colleges/universities have used to encourage high school and community college students to pursue degrees that lead to teaching STEM as a profession. We would like to learn how other projects have developed faculty

interest and engagement in the outreach to STEM students and the encouragement of STEM students to pursue careers in teaching.

As Mt. SAC merges implementation of our guided pathways with our STEM initiatives, we will explore how other colleges have supported contextualized learning in math classes to bolster a growth mindset among students and improve students' self-efficacy in math and other STEM courses. We also seek to discover and implement new strategies for improving faculty understanding of student potential, creating a capacity mindset among our STEM faculty. We would like to learn how other colleges have supported the professional development of faculty as they move in the direction of contextualizing math curriculum to STEM technician programs and non-STEM disciplines.

Finally we hope to capitalize on existing initiatives to foster not just an interest but also a passion for teaching in the STEM disciplines, particularly among underrepresented students. Mt. SAC's feeder high schools serve a huge population of underrepresented students, many of whom enroll at Mt. SAC upon high school graduation. We desire to learn about successful strategies in working with high schools and universities in the recruitment and support of students through community college, transfer to a university, and ultimately into STEM teaching careers.

10. Identify any activities and outcomes the college hopes to undertake as a result of participating in the STEM Thought Leaders' Summit and ATE Conference. (350 words or less)

While Mt. SAC has had success with ATE grants in the past, the proposed faculty/administrator team is new to NSF funding opportunities. If selected to participate in the summit, the team will share what they learn with the broader STEM faculty upon their return to campus. A team of faculty plan to pursue an ATE grant that will help the college recruit, train, and inspire future STEM teachers. Ultimately, Mt. SAC wants to create a clear pipeline for underrepresented students to pursue STEM degrees, including building a growth mindset within them.

Mt. SAC aims to increase resources for professional development of STEM faculty regarding the contextualization of curriculum to career technical education fields as well as strategies for engaging students and encouraging their pursuit of STEM careers, especially the teaching profession. Following this professional development, Mt. SAC will provide time for faculty to develop and/or revise curriculum.

Having gained insight and exposure to the best current practices and innovative strategies, we intend to shape our guided pathways so that all students can choose to matriculate into STEM disciplines, regardless of their math skill level upon entry to the college. We hope to achieve greater retention and success rates among students taking pre-STEM math courses and, ultimately, increased STEM certificate and degree completion and transfer into baccalaureate degree programs in STEM and STEM teaching.

We also plan to increase collaboration with high schools, community colleges, and universities to create a pipeline of students, particularly underrepresented students, whose positive outcomes are supported at each level of their pursuit of a career in STEM teaching. Ultimately, we hope to achieve the long-term goal of producing more STEM teachers who share similar demographics and experiences with the students they teach.

Finally, Lisa Morales is committed to the pursuit of other NSF grant opportunities in the future. While a core group of senior Mt. SAC faculty have been successful in securing and implementing NSF grants, the

department and college are eager to ensure continuity of excellence. Lisa represents a new generation of faculty leaders at the college who will continue this essential work.

11. Faculty biography. Provide a short professional bio. (150 words or less)

Professor Lisa Morales is beginning her third year as a full-time faculty member in the Mathematics Department at Mt. SAC. Before joining the college in the fall of 2016, she was a full-time high school teacher for five years, teaching mostly AP Calculus AB/BC courses. She is devoted to using 21st Century technology in the classroom and has a genuine passion for teaching and math that she shares with her students. She earned a Bachelor of Science in Pure Mathematics from California State Polytechnic University, Pomona, in 2008, a Master of Science in Mathematics from University of California, Riverside, in 2010, and a Master of Science in Education from Mount Saint Mary's University in 2017.

12. Faculty statement of interest. Describe your personal and professional interest in broadening equity and access in STEM technician education, learning more about the NSF ATE program, and participating in the STEM Thought Leaders' Summit and ATE Conference. (150 words or less)

As a new faculty member at Mt. San Antonio College, I am seeking to innovate new ways to encourage our student population to pursue careers in the STEM fields. As a successful minority and female in math, I have always felt the desire to encourage those underrepresented in STEM to advance in STEM fields by being an example. Since I am at the beginning of my career in a community college setting, I am looking for fresh ways to impact this deserving population. My colleagues in the Chemistry Department have had long-standing success with the NSF ATE Program, but the Mathematics Department has never pursued NSF funding. I hope to attend the STEM Thought Leaders' Summit and ATE Conference to engage with faculty at other colleges and find out about successful practices in bridging the equity gap among students in the STEM fields.

13. Administrator biography. Provide a short professional bio. (150 words or less)

Matthew Judd has been a faculty member and administrator at Mt. SAC for over 31 years. He taught for 20 years in the English Department, where he explored contextualized learning for career technical education students in composition classes. He has served as the campus curriculum liaison for the Academic Senate. In his current role as Dean of Natural Sciences, he leads the Agriculture, Biology, Chemistry, Earth Sciences & Astronomy, Mathematics & Computer Science, and Physics & Engineering Departments. For the last 10 years, Matthew has represented the college's Instruction Team on the Student Preparation and Success Council – a shared governance committee. He has been an advocate of supporting underrepresented students in STEM, working with equity funding to open the campus's first STEM Center. Over 20,000 students are enrolled in Natural Sciences Division courses at Mt. SAC, and Matthew is always looking for new and innovative ways to support their success.

14. Administrator statement of interest. Describe your personal and professional interest in broadening equity and access in STEM technician education, learning more about the NSF ATE program, and participating in the STEM Thought Leaders' Summit and ATE Conference. (150 words or less)

I am a living example of how math anxiety can push students away from STEM. I have a lifelong love of science, but struggles with advanced math led me to seek solace in the humanities. When this dynamic is applied to underrepresented students, I see participation in STEM as a serious challenge to socio-

economic equality. We can lesson equity gaps by recruiting underrepresented students into STEM majors and providing them the support they need to succeed. I want to network with the ATE community so that I can bring back resources and ideas to improve student outcomes. I am excited about the opportunity to learn about ATE and other NSF grant opportunities. Many of Mt. SAC's grant savvy administrators and faculty are nearing retirement. I know how impactful grants can be, and I want to make sure that I can continue to provide those positive impacts moving forward.

Faculty Certification

15. Faculty member name

Lisa Morales

By checking this box below, I agree to fulfill the requirements of participating in the STEM Thought Leaders' Summit and ATE Conference as outlined in the Request for Applications. I affirm that the name typed above represents my official signature and that all information provided is complete and accurate.

I certify that the information submitted in this application is true.

☒ Yes

Submission date: August 20, 2018

Administrator Certification

16. Administrator name

Matthew Judd

By checking this box below, I agree to fulfill the requirements of participating in the STEM Thought Leaders' Summit and ATE Conference as outlined in the Request for Applications. I affirm that the name typed above represents my official signature and that all information provided is complete and accurate.

I certify that the information submitted in this application is true.

☒ Yes

Submission date: August 20, 2018

Institutional Certification

The applicant certifies to the best of his/her knowledge and belief that the data in this application is true and correct and that the filing of this application has been duly authorized by the institutional leadership and governing body of the applicant and the applicant will comply with the requirement to participate in the event if selected to attend.

By checking the box below I affirm that I have reviewed and approved this application, and support the commitment of a two-person team to attend the STEM Thought Leaders' Summit and ATE Conference,

to implementing resources and lessons learned from the event, and to consider future STEM mentoring and/or funding pathways to continue to broaden access to STEM technician education.

17. President or Chief Academic Officer

Name: William Scroggins, Ph.D.

Title: President & CEO

Institution: Mt. San Antonio College

I certify that the information submitted in this application is true.

☒ Yes

Submission date: August 20, 2018