



TEXAS REGIONAL STEM DEGREE ACCELERATOR

STEM PATHWAY:
ENGINEERING

Regional Team Members:

The University of Texas at El Paso:
Lead Institution

El Paso Community College

Region 19 Education Service
Center

Workforce Solutions Borderplex

The Borderplex Alliance

Council on Regional Economic
Expansion & Educational
Development (CREEED)

OVERVIEW

About El Paso: El Paso is a dynamic community along the Texas-Mexico border with a rich history of partnership between education, business, and philanthropic leaders. El Paso students are 90% Hispanic and 75% economically disadvantaged. The K-12 and higher education partners in El Paso have worked hard for many years to align their educational systems to support students.

Why Engineering: Texas ranks 6th in the nation for Engineering employment opportunities.¹ With a student population that is 80% Hispanic², Engineering graduates from The University of Texas at El Paso (UTEP) add important diversity to the workforce in Texas metro areas such as Dallas and Houston.

STEM PATHWAY PLAN & INTERVENTIONS

The goal of this project is to increase female enrollment and graduation in Engineering and to train more female engineering faculty. To accomplish this, the team is working to develop more engaging classrooms and inclusive partnerships.

MAJOR ACTIVITIES:

- 1. Curricular innovation:** A set of four courses will provide students with experiences that continuously build interest and curiosity, provide context and meaning, and build confidence in their ability to successfully tackle challenging engineering problems, which is especially effective in retaining women students.³
- 2. Communities for Student Success:** By combining a holistic advising system and pre-professional experiences with industry partners, a “sense of identity as an engineer” will be instilled in students.
- 3. Strategic Outreach:** To increase the number of students enrolling and succeeding in Engineering, the regional team will focus on recruitment, retention, parental outreach, and K-12 partnerships.
- 4. Stackable Credentials:** All Engineering Bachelor’s degrees are articulated to an Associate’s degree. Students have multiple clear pathways to earn degrees, including reverse transfer and co-enrollment at both El Paso Community College and UTEP.

PROJECT IMPACT:

This project is anticipated to accomplish the following outcomes:⁴

- **Train** 60 college faculty and 4 high school teachers
- **Serve** 1,400 college students and 400 high school students
- **Produce** 200 Associate and 1,100 Bachelor of Science in Engineering degrees

¹Burning Glass. Labor Insight tool, (2014). Custom report for El Paso. ²Self-Reported Data. ³Busch-Vishniac, I., and Jarosz, J. (2004). “Can Diversity in the Undergraduate Engineering Population Be Enhanced through Curricular Change?” Journal of Women and Minorities in Science and Engineering 10(3). ⁴Self-Reported Data.



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BACKGROUND & OVERVIEW

Texas is projected to have approximately 9% of the nation's future STEM opportunities, the second highest in the country.¹ At the same time, the state's rapidly changing demographic mix will pose challenges as Texas's growing, economically disadvantaged, minority students have less than a 10% postsecondary completion rate.² Therefore, the urgency to identify policy and programmatic strategies to meet this need is critical.

The Texas Regional STEM Degree Accelerator (STEM Accelerator) initiative is focused on supporting regional teams of education and workforce partners to increase the number of students who will earn a STEM credential.

PROJECT GOAL AND STRATEGY

The goal of STEM Accelerator is to assemble regional teams who will ensure that up to 100,000 students earn STEM degrees and certificates (both two-year and four-year) that meet regionally-identified workforce needs. Regional teams will accomplish this by examining data, identifying the STEM pathway(s) in which they plan to work, and engaging faculty and workforce to:

- Redesign gateway courses in STEM pathways (re)aligned to workforce and/or
- Provide professional development for faculty to support improved and innovative methods of teaching and learning (such as active learning or project-based learning)

EXPECTED IMPLEMENTATION OUTCOMES AND DELIVERABLES

The two major outcomes of this project are to:

1. Increase retention in STEM pathways by ensuring that STEM teaching practices are engaging and supportive.
2. Ensure that institutional policies and systems support retention and completion of STEM pathways, particularly among underrepresented students.

¹Schleicher, A. (2012). Education At a Glance: OECD Indicators.

²National Center for Higher Education Management Systems (2012). A new measure of educational success in Texas.

The Texas Tribune (2014). Higher Ed Outcomes. Austin, TX.