

## CAL STATE LA RECEIVES DUAL NSF AWARDS TO ADVANCE STUDENT SUCCESS AND WELL-BEING ACROSS THE STEM PIPELINE

Cal State LA has been awarded two major grants from the National Science Foundation (NSF) that together will strengthen student success, persistence, and well-being across the STEM educational pipeline—from undergraduate mathematics coursework to graduate research training.

Both grant projects are led by Montebello resident Jessica Morales-Chicas, who is a professor of child and family studies in the Rongxiang Xu College of Health and Human Services at Cal State LA. The projects reflect a shared commitment to student-centered, evidence-based approaches that address not only what students learn, but how they experience learning and research environments.

One award, funded through NSF's Improving Undergraduate STEM Education program, supports a three-year project titled "Improving Attributions in Undergraduate Pre-Calculus for STEM Success." Daniel Da Silva, professor of mathematics in the College of Natural and Social Sciences, serves as co-principal investigator on the project.

Funded by a \$399,000 NSF grant, the project addresses the challenges of pre-calculus, a foundational gateway course for many STEM majors that often serves as a barrier—particularly for students from historically underrepresented backgrounds.



Photo: Jessica Morales-Chicas, professor of child and family studies at Cal State LA. (Credit: Jordan Renville/Cal State LA)

"Pre-calculus is often a turning point for students in STEM," said Morales-Chicas, whose work focuses on the psychological, structural, and institutional factors shaping student experiences in STEM. "This project focuses on helping students understand that early challenges are not fixed indicators of ability, but opportunities for growth and strategy adjustment."

The project implements and evaluates an attribution retraining intervention designed to help incoming students reflect on exam performance, reframe unhelpful beliefs about failure, and develop more adaptive explanations related to effort, strategy use, and other controllable factors.

Guided student reflection is integrated directly into pre-calculus coursework, positioning exams as tools for learning rather than fixed judgments of ability. Using a quasi-experimental design with pre- and post-measures, the study examines changes in students' causal attributions and their relationships to course performance, confidence, and persistence in STEM pathways.

"Improving students' academic outcomes in STEM requires more than content mastery; it also requires addressing how students make sense of success and failure in high-stakes courses," Morales-Chicas added. "This intervention helps students reflect on their performance and make a plan to learn from their experience."

The second award, funded through NSF's Innovations in Graduate Education program, advances the California State University Well-being Alliance for Research Masters (CSU WARM), a four-year, multi-campus initiative that focuses on graduate student mental health and well-being within STEM research training.

Funded by a \$954,000 NSF grant, CSU WARM includes \$171,000 allocated to support Cal State LA's participation in the alliance. The initiative was implemented in response to growing evidence that graduate students face significant academic pressure, financial stress, mental health challenges, and unclear expectations—factors that can undermine persistence, research engagement, and degree completion.

CSU WARM examines how structural, academic, and psychosocial factors shape the well-being of research graduate students in STEM and evaluates evidence-based support designed to strengthen students' sense of belonging, self-efficacy, and academic momentum. The project also incorporates an innovative mobile app that tracks mental well-being and connects students to relevant resources.

At Cal State LA, Morales-Chicas serves as a campus lead, collaborating with faculty leaders at Stanislaus State (main campus), Cal State Northridge, Cal State East Bay, and the CSU Chancellor's Office. This distributed leadership model ensures that findings are relevant across diverse institutional contexts and informs systemwide approaches to graduate education.

"CSU WARM is intentionally designed as a collaborative alliance where each campus brings its own expertise and student context, and together we are building a systemwide understanding of graduate student well-being," Morales-Chicas said. "Graduate student well-being is foundational to academic success, and this initiative centers well-being as a core component of graduate education, not an add-on or afterthought."

Together, these NSF-funded projects underscore Cal State LA's leadership in advancing student-centered, research-driven innovations that support student success at critical junctures in STEM education—from early undergraduate coursework to advanced research training.

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