



# STEM Gateway

## PROJECT FOR INCLUSIVE UNDERGRADUATE STEM SUCCESS

### PRIORITIES STATEMENT

The University of New Mexico STEM Gateway program seeks to increase the number of Hispanic and other low-income students attaining STEM degrees. This program will serve as a model for collaboration, transfer, and articulation between two-year and four-year Hispanic-serving institutions who are seeking to increase STEM student achievement. STEM Gateway initiatives focus resources on undergraduate science and math courses that serve as gateways to STEM degrees, and that traditionally have had low success rates.

### STEM GATEWAY INITIATIVES

- **Gateway Science and Math Course Reform:** Faculty-driven projects designed to change instruction and curriculum to better serve low-income and minority students. Each project team includes faculty from UNM and CNM working collaboratively on such areas as: course outcome plans, curriculum revision, in-class assignments, inquiry-based lab exercises, assessment instruments, and teaching resources.
- **Peer Learning Facilitators:** Peer-assisted collaborative learning activities in large gateway sections. The assistance of facilitators allows instructors to incorporate a wider variety of effective instructional strategies.
- **STEM Student Interest Groups:** One-credit shadow seminar courses that connect core STEM courses to other STEM majors. These courses will introduce students to the connections between STEM disciplines, while encouraging them to explore their own career and professional interests.
- **Data-driven Prioritization:** Data collection and analysis to assist UNM in better understanding the course-taking patterns and success rates of UNM students and CNM transfers in relation to STEM degree attainment. Specific research questions will be posed and addressed through qualitative and quantitative methods.

### GRANT INFORMATION

The STEM Gateway program is funded through a U.S. Department of Education TITLE V grant, 2011-2016 (total anticipated funding \$3.82 million).

### BY THE NUMBERS

HERE ARE SEVEN OF THE 29+ OBJECTIVES TRACKED REGULARLY

# 80%

Of Hispanic and low-income students will complete each reformed course the third semester it is offered

COURSE COMPLETION

# +20%

Of students completing each PLF support section with a "C" or higher

COURSE SUCCESS

# +5%

Fall-to-fall retention rate for Hispanic students in STEM majors

RETENTION

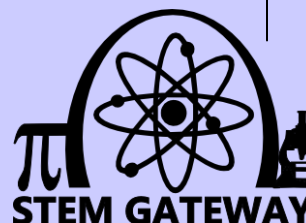
Number of Hispanic and other low-income students receiving bachelor's degrees in STEM will visibly increase by the third year

GRADUATION

3 Gateway course reform projects/year

15-20 PLF sections/year

15 SSIG sections/year (year 2+)



# STEM GATEWAY Achievements and Findings

## COURSE REFORM PROJECT

- Fifteen faculty members from UNM and CNM are collaborating to improve curriculum and instruction in three UNM STEM Gateway courses: CHEM 122 (General Chem II), MATH 121 (College Algebra) and PHYC 160 (General Physics).
- More than 500 students will be impacted by these course reform projects during the Fall 2012 semester. As reforms pilot projects scale up, these numbers will increase dramatically.
- Within the first year, more than fifty STEM & STEM-H faculty members have participated in STEM Gateway sponsored symposiums, trainings and workshops.

## INSTITUTIONAL RESEARCH

**STEM Gateway is currently engaged in three institutional research projects:**

- Qualitative study of Hispanic STEM student perceptions at UNM.
- Analysis of math course completion patterns for STEM graduates.
- Analysis of predictors and trigger points for UNM students dropping out of STEM majors and leaving the University.

**One quick finding:** More than forty percent of first-time full-time freshmen at UNM who completed STEM degrees in 2010-2011 started at the College Algebra level or lower.

## PEER LEARNING FACILITATORS

- In the Spring of 2012, STEM Gateway hired, trained, and placed 27 Peer Learning Facilitators (PLFs), serving 1,164 students in 15 sections of 5 STEM courses.
- 47% of students in Spring 2012 PLF sections were Hispanic.
- Students in PLF sections succeeded ("C" or above) at a rate of nearly three percentage points higher than those in non-PLF sections of the same courses. For Hispanic students, this increased to 4.46% higher.
- Forty percent of students in PLF sections felt that having a PLF available in the class was very important to them, while only 8.7% felt it was not important (40.9% felt it was moderately important).
- In the fall of 2012, STEM Gateway has hired, trained and placed 40 PLFs, serving 1,324 enrollments in 23 sections of 8 STEM courses.

## STEM STUDENT INTEREST GROUPS

- In the fall of 2012, STEM Gateway is offering four full-semester STEM Student Interest Group (SSIG) sections that pair the following courses and majors: Biology and MATH 180, Biology and CHEM 121, and Engineering and CHEM 121. Thirty-seven students are enrolled in these sections.
- Also in the fall of 2012, STEM Gateway is offering six late-start sections that serve students from the following majors: Engineering, Biology, Environmental Science, and Earth and Planetary Science.

## GRANT STAFF & CONTACT INFORMATION

**PRINCIPAL INVESTIGATORS:** Dr. Tim Gutierrez, Dr. Gary Smith  
**STAFF:** Tim Schroeder, Project Director; Vicky Morris-Dueer, Institutional Researcher; Mary Cianflone Romero, PLF Coordinator

**PHONE:** 505-277-1723  
**EMAIL:** timschroeder@unm.edu