



2016

STEM Cultural Colloquium

Getting at the Gap

FRIDAY, APRIL 1ST ■ 9:00 AM - 4:30 PM
STUDENT UNION BUILDING ■ BALLROOM A



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A 1-day event hosted by STEM Gateway, the **STEM Cultural Colloquium** aims to bring together professionals from STEM initiatives across campus, to engage in dialogue about how to best structure and implement STEM programs for optimal levels of student success. The colloquium will focus particularly on the success of STEM students from underrepresented populations, and includes presentations from esteemed leaders in STEM initiatives from UNM and outside Universities, and aims to provide a diverse array of perspectives on how to better meet student success objectives. The event will include a panel discussion with representatives from successful programs across campus.

2016 COLLOQUIUM GOALS »



1. TO **BETTER UNDERSTAND** UNDERREPRESENTED POPULATIONS IN STEM.
2. TO **INCREASE AWARENESS** OF ISSUES THAT LEAD TO THE EDUCATIONAL GAPS IN ACHIEVEMENT.
3. TO **LEARN NEW WAYS** OF ALLEVIATING THE GAP BY DEVELOPING PROCESSES, PROGRAMS & MINDSETS THAT ADDRESS THESE NEEDS.

FEATURED SPEAKERS »



Dr. Gabriel López - (Opening)
VP for Research & Economic Development
Professor of Chemical & Biological Engineering
University of New Mexico



Dr. Laura Rendon - (Luncheon)
Professor of Educational Leadership & Policy Studies
University of Texas, San Antonio



Dr. Saundra McGuire - (Closing)
Emerita Professor of Chemistry
Louisiana State University

8:00 - 8:55 am » Breakfast Served

9:00 - 9:30 am » Opening

Gabriel Lopez, Ph.D.

VP for Research & Economic Development and Professor of Chemical & Biomedical Engineering
University New Mexico

A Gateway to Diversity: The Role of the Research University in Transforming the STEM Pipeline

In the United States, the modern research university plays a pivotal role in shaping the future face of STEM fields. Faculty commitment to basic and applied research coupled with federal funding opportunities enable research universities to serve as a springboard for the development of a diverse STEM workforce. To achieve this objective, research universities have to consistently and effectively reach students from underrepresented backgrounds throughout the K-20 continuum. López recounts his personal experiences growing up in a small town in Northern New Mexico and how opportunities in STEM served as a gateway to his success as a student, faculty member, and ultimately as an executive in higher education. He will touch on his own work developing research opportunities for underrepresented groups through the NSF's UNM/Harvard PREM: Leadership in Biomaterials program. Finally, he will round out his talk by highlighting some of the STEM services and programs supported by the UNM Office of the Vice President for Research and its partners.

9:35 - 10:15 am »

Gary Smith, Ph.D.

Principle Investigator STEM Gateway & Assistant Dean of Faculty Development, School of Medicine
University New Mexico

How We Teach, Matters

Compelling evidence has existed for decades that achievement gaps and retention problems in college STEM courses and majors are strongly related to how courses are taught. Recent research demonstrates that inclusive pedagogies substantially reduce achievement gaps in gateway science courses. Furthermore, these pedagogies improve learning for all students, meaning that inclusive pedagogy is the best pedagogy for everyone and is correlated to research on human learning. This observation further emphasizes that cultural knowledge differences across socioeconomic categories lead, for many students, to mismatches with the "rules of the game" in higher education that arguably increase, rather than decrease, degree-earning inequity. Inclusive – best – pedagogy validates cultural knowledge originating outside of higher education. UNM STEM faculty are applying these principles and positive results are emerging.

10:20 - 11:40 am » University of New Mexico Panel Session

Antonio Bañuelos, MS

Program Coordinator; Post-Baccalaureate Research and Education Program (PREP)

Alfredo Bolanos

Post-Baccalaureate Research and Education Program (PREP) Scholar

Ricardo Romero, MA

Director; Ronald E. McNair Scholars Program & Research Opportunity Program (McNair/ROP)

Matthew Moyd

Senior, Biology Major

Joseph Cook, Ph.D.

PI/Director; Undergraduate Research Opportunities (URO)

Donavan Jackson

Graduate - Masters, Biology

Elaine Manzanilla, MS

Program Coordinator; Undergraduate Pipeline Network (UPN)

Steven Peralta, MSEE

Director & Academic Advisor; Engineering Student Services (ESS)

Erika Yegerlehner

Senior, Mechanical Engineering; Engineering Student Services (ESS)

Lisa Paz

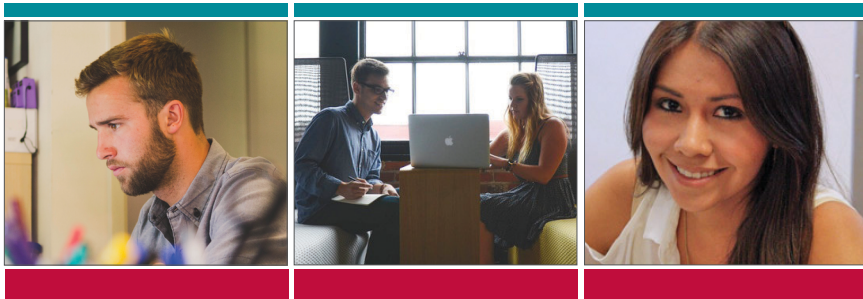
Director of Membership & Communications; American Indian Science and Engineering Society (AISES)

Gary Allison, MA

Program Specialist; Center for Academic Program Support (CAPS)

STEM Panel Discussion

Representatives from successful programs across UNM's campus discuss their approach to helping underrepresented groups, specifically within STEM. They will also address the challenges and reflections.



11:40 am - 12:05 pm » Lunch Served

12:10 - 1:10 pm »

Laura Rendon, Ph.D.

Professor of Educational Leadership & Policy Studies

University of Texas, San Antonio

The Importance of Working With A Culturally-Validating, Asset-Based Student Success Framework in STEM

This presentation will focus on how low-income, first-generation students of color often succeed against the odds in STEM fields of study. Their success is created with their own cultural assets and ways of knowing that are often unacknowledged by educators who subscribe to deficit-minded thinking about students of color. STEM educators need to recognize and embrace student assets and work with a culturally-validating STEM student success framework to ensure that more students of color are represented in STEM careers and fields of study.

1:15 - 1:55 pm »

Lisa Paz

Director of Membership & Communications

American Indian Science and Engineering (AISES) - University of New Mexico

Chelsea Chee

Diversity Coordinator

New Mexico's Experimental Program to Stimulate Competitive Research (NM EPSCoR)

Mary Jo Daniel, Ph.D.

Director, Faculty Research Development

University of New Mexico

Increasing STEM Identity: The Natives in STEM Project

Studies show that images affect a person's identity and sense of belonging. From that, individuals may find it difficult to imagine themselves as students or professionals in a STEM discipline because they don't see themselves represented in STEM-related images. The Natives in STEM project is creating and exposing positive images and stories of Native Americans in STEM to tribal schools and communities through electronic and print media.



2:00 - 2:40 pm »

Roberto Ibarra, Ph.D.

Associate Professor, Sociology
University of New Mexico

Context Diversity: A New Paradigm for Explaining the Achievement Gap among Underrepresented Populations in STEM Disciplines

Higher education continues seeking ways to increase the diversity of populations pursuing careers in STEM disciplines. One objective is to eliminate the persistent achievement gap between underrepresented populations (URM) and majority populations with programs that rely on diversity models that seem to work. Most current operating models rely on affirmative action principles of access and/or multicultural principles of retention that promote assimilating and socializing URM populations to fit into the social and intellectual fabric of higher education. These models have demonstrated some success over the years, but progress has been slow and the lack of diversity still persists. Furthermore, even the most successful of these programs lack a deep understanding of what it is they are doing that works. As a result, those few that do enter the academy often do not thrive and feel as though they are outsiders in the academic world.

Context Diversity (CD) is a relatively new paradigm that is systemic, inclusive, and reframes common assumptions about diversity and how it works. It encourages reframing, rather than reforming, academic cultures to meet the needs of all populations and especially underrepresented groups. The basic assumption is that social/cultural elements of research and teaching in higher education are imbalanced or out of sync with the cultural contexts of diverse populations now arriving in greater numbers at our institutions. Recent research indicates that these conflicts can be resolved with application of guiding principles based on a Multicontext theory that fosters enhanced organizational cultures and relationships, creating a foundation for reframing higher education in the 21st century.



2:45 - 3:25 pm »

Jamal Martin, Ph.D.

Director of Peace and Justice Studies
University of New Mexico

Mindfulness of Global Learning and Mind-Brain Education in STEM

Most of current STEM work remains rooted in the musings of Bacon and resulting efforts that eventually led to abuse of science and technology and equally important, scientific racism. These scholarship traditions have supported slavery, colonialism and imperialism while ignoring a cultural debt from indigenous knowledge and opportunities for eco-survival and sustainability. Decolonizing scientific research as a Eurocentric process of inquiry requires re-evaluation of current theoretical and methodological frameworks proposed by Kuhn, Popper and possibly accepting models proposed by Lakatos and Feyerabend. A new process of inquiry is required to forestall threats made to humanity partially caused by human aggression and progress made in science and technology. Equity, diversity and inclusion approached through foundations of integrative thought as a focus of serious teacher reflection about paradigmatic and disciplinary boundaries allows for more just than mirroring on social reconstruction obstacles. A new cultural perspective in STEM allows for realizing (1) STEM practices arise out of real need and interests; (2) cultural pride found in appreciation of different contributions made by others; (3) all the disciplines take on new meaning with integrated approaches; and (4) cultural infusion breeds more respect of different heritages. By reclaiming the importance of the cultural views of thinking about mathematics and science we reinforce the opportunities for improving the quality of the teacher influence that strongly factors in student interest and achievement. Mindfulness towards accepting and implementing transdisciplinary approaches supports systems and divergent thinking, analysis and problem solving. The realization of the power, language, daily practice of cultural views and thinking of mathematics and science comes about with a change in policy thinking related to STEM-capable teachers.

3:30 - 4:30 pm » Closing

Sandra McGuire, Ph.D.

Emerita Professor of Chemistry
Louisiana State University

Metacognition: The Key to Changing Mindsets and Closing the Achievement Gap

All STEM students who are admitted to college have the ability to excel in STEM courses. However, many minority students do not have effective learning strategies and resort to memorizing information just before tests. They then lose confidence in their ability after they fail their first round of exams. This interactive presentation will introduce cognitive science research-based learning strategies that will help students develop higher order thinking skills, start acing courses, and change their mindset about their intelligence from fixed to growth. The session will focus on ways to teach students simple, yet powerful learning strategies to ensure success in STEM courses and beyond.

Welcome to the STEM Gateway Program! At the University of New Mexico, we are committed to improving the way that we teach science, technology, engineering and math (STEM) courses in order to empower more Hispanic and low-income students to achieve their STEM career goals. Latino and Latina scientists are transforming the world through their creativity, intellect and dedication. We are proud to contribute to this effort!

PROGRAM INITIATIVES »

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.

GATEWAY SCIENCE & MATH COURSE REDESIGN »

Faculty-driven projects designed to change instruction and curriculum to better serve low-income and minority students.

PEER LEARNING FACILITATORS (PLF) »

Peer-assisted collaborative learning activities in large gateway sections.

STEM GATEWAY WORKSHOPS & ACTIVITIES »

Courses that help students develop strong STEM learning skills, connect to their STEM departments earlier and understand the connections between STEM disciplines.

DATA & IMPACT »

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.

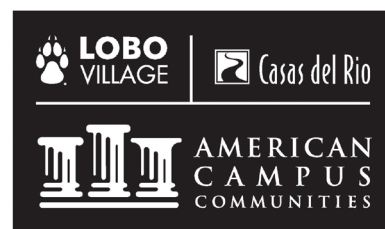


Program Design by Yvonne Gandert

STEM Gateway Program would like to take the time to thank our colloquium sponsors for 2016. Thank you for believing in STEM initiatives and for your support of the STEM Gateway Program.



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UNDERGRADUATE PATHWAYS



Ideas You Can Touch
Ideas que puedes tocar



FUNDING »

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

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STEM UP

provides students with guidance, support and an academic pathway for STEM graduation.



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CNM
Central New Mexico Community College

UNM

OUR GOALS:

Increase the number of Hispanic and low-income students obtaining degrees in the fields of science, technology, engineering and mathematics

Develop model transfer articulation agreements between two-year Hispanic Serving Institutions (HSI) and four-year institutions in STEM fields.

RESOURCES:

Student Education Leaders at CNM and UNM serve as guides, mentors, and role models for STEM students.

Visit our STEM UP Websites: UNM website: stemup.unm.edu
CNM website: cnm.edu/stemup

Download our STEM UP Phone App and see the degree plan for STEM majors and UNM transfer alignment.: <http://stemup.unm.edu/mobile-app>

STEM UP TRANSFER CENTERS:

UNM Main Campus • 505-277-1723
UNM South Campus - 1155 University SE • Albuquerque, NM • 505-277-0320
CNM Main Campus - 900 University SE • Albuquerque, NM • 505-224-3253

A Title V grant funded for five years in the amount of \$3.5 million by the U.S. Department of Education and authorized under Title III Part F Section 371 of the Higher Education Act of 1965 as amended, Hispanic Serving Institutions (HSI) STEM and Articulation Program Cooperative.



"We cannot seek achievement for ourselves and forget about progress and prosperity for our community... Our ambitions must be broad enough to include the aspirations and needs of others, for their sakes and for our own." - Cesar Chavez

PROGRAM DIRECTOR ■ NATALIE ROBINSON BRUNER

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OUR MISSION

The University of New Mexico STEM Gateway program seeks to increase the number of Hispanic and low-income students attaining STEM degrees.

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.

STEMGATEWAY.UNM.EDU

STEM GATEWAY PROGRAM

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