

## STEM + ENTREPRENEURSHIP + DIVERSITY

### FUNCTION AND VALUE TO NEW MEXICO

- NMSU STEMED will develop outreach initiatives uniquely designed to target the STEM training of New Mexico students, focusing on broadening participation (in terms of both gender and ethnicity), increasing overall STEM competency;
- NMSU STEMED will directly address the statewide shortage of STEM trained and STEM competent workforce (over 53,000 open positions by 2018);
- NMSU STEMED will serve as the only program in New Mexico to focus on the integration of STEM competency at all levels of the K-20 academic pipeline, with the development of solid business and entrepreneurial skills;
- NMSU STEMED will be the sole program in the state to creatively and effectively integrate decades of experience and research in STEM education and outreach, STEM broadening participation and STEM entrepreneurship, leveraging several million dollars of federally funded research in STEM outreach and STEM education;
- NMSU STEMED will target the problem of attrition and low participation in STEM programs and STEM courses, leading to improved recruitment and increased graduation;
- NMSU STEMED fulfills NMSU's land grant mission of serving the state's diverse population, especially by providing practices to enhance success of at-risk students in STEM disciplines;
- NMSU STEMED fulfills the University's land grant mission of serving New Mexico's diverse population by providing outreach programs to broaden participation in STEM to students from traditionally underrepresented backgrounds;
- NMSU STEMED will reach and support, through educational and outreach efforts, over 1,000 K-16 students in FY16, through mentoring, tutoring, educational experiences, competitions, summer intensives and other STEM reinforcement activities;
- NMSU STEMED will directly support over 20 student employees as STEM mentors & trainers;
- NMSU STEMED will directly engage over 20 NMSU faculty members in FY16 to create and deploy the most effective and innovative outreach and training practice in STEM and Entrepreneurial skills development;
- NMSU STEMED will serve as a statewide engine for STEM training and outreach, using the Cooperative Extension Service to bring the STEMED Program activities to all 33 counties;
- NMSU STEMED will serve as a statewide clearinghouse of expertise and practices in STEM and business outreach and training, providing integration among programs, promoting replication of successful models, and offering community engagement and awareness in the importance of STEM education.

# STEM + ENTREPRENEURSHIP + DIVERSITY

FY16 NEW FUNDING REQUEST:

\$475,000

## PROGRAM DESCRIPTION

The aim of this request is to establish a *STEM + Entrepreneurship + Diversity (STEMED)* program, at NMSU, to serve a statewide K-20 audience and meet state STEM workforce and entrepreneurial needs. The mission of the STEMED Program is to enhance the impact and quality of STEM education in the state, focusing on the fundamental technological and computational thinking skills. The program will emphasize training of a diverse cadre of students in STEM disciplines, engaging traditionally underrepresented groups (i.e., women, students of Hispanic heritage). STEMED will also serve as an innovation engine to meet the state's STEM workforce and entrepreneurial needs for improved economic development. STEMED will develop high impact recruitment, engagement and training activities, supported by partnerships with students, teachers, communities, researchers, policymakers and corporate partners. STEMED will promote STEM motivation, preparation, engagement, and professional development, while sharing its initiatives statewide.

## NEW FUNDING JUSTIFICATION

- The need for a STEM-competent workforce is evident; the Dept. of Labor estimates over 53,000 new STEM jobs created in New Mexico in the next 4 years (the bulk in computing and engineering). National statistics show a dramatic lack of interest towards STEM, with a skewed participation in terms of gender and ethnicity – 12% of degrees in the technical areas of STEM are awarded to women, and only 8% of undergraduate STEM degrees are awarded to Hispanic students. Our program meets an urgent need to establish a creative STEM recruitment & training infrastructure, along a pipeline from K-12 to universities and technical schools.
- NMSU is uniquely positioned to address this crisis. NMSU has demonstrated rapid growth and success in STEM training and outreach, through partnerships among higher education, public schools, businesses, and the Arrowhead Research Park. Although many effective STEM efforts exist at NMSU, many are one-dimensional – tackling the STEM challenge through the lens of a single organization or discipline. STEMED integrates these successful initiatives, challenging educators, researchers, and community stakeholders, to collaborate to address the globality of the STEM challenge and the overarching workforce and innovation needs of New Mexico.
- We will assess the impact of STEMED through several metrics. Short-term metrics will measure STEMED participation of students, teachers, and faculty (with emphasis on gender and ethnic diversity), performance in standardized tests, along with competency and attitude tests from STEM areas. Long-term metrics will measure sustained interest in STEM, changes in enrollment and performance in STEM courses and degree programs, engagement in STEM entrepreneurial experiences, and state-wide changes in STEM employment and diversity.
- STEMED builds on several successful NMSU programs. In particular: **(1)** The Science, Engineering, Math, and Aerospace Academy has served over 30,000 students in 14 years, with improvements in science academic performance, and receiving awards for academic accomplishments; **(2)** Young Women in Computing served 10,000 students in 8 years, improving engagement of women in computing, enhancing entrance in college STEM programs, and transforming NMSU into a nationally recognized hub for training women in computing.