

# QEM Network

Highlights of the  
Draft Report on the  
September 25-26, 2009

Outreach Forum on Building  
Science, Technology, Engineering,  
and Mathematics (STEM) Research  
and Education Capacity at Hispanic-  
serving Institutions (HSIs)

# Goal of the HSI STEM Forum

Assist the Division of Human Resource Development (HRD) in NSF's Directorate for Education and Human Resources (EHR) in gathering broadly representative, informed, and comprehensive input regarding essential program components and requirements for a proposed new NSF STEM initiative focused on HSIs

# HSI STEM Forum Objectives

- Identify critical needs in STEM undergraduate education and research at HSIs
- Ensure that faculty at HSIs have an opportunity to inform the development of an NSF STEM education and research capacity-building initiative to address their needs

# HSI STEM Forum Participants

- 144 STEM faculty members representing 69 HSIs
- 32 two-year and 37 four-year institutions
- 5 National Science Foundation (NSF) program officers
- 4 QEM consultants and presenters
- 7 QEM staff members

# Location of the Participating Institutions

- 9 states and Puerto Rico
- The nine (9) states:  
Arizona, California, Colorado, Florida,  
Illinois, New Jersey, New Mexico,  
New York, and Texas

# Input from Forum Participants on Critical Areas for Building STEM Capacity at HSIs

- Written statements provided to QEM prior to and during the Forum
- Key critical areas discussed by participants in breakout groups (by institutional type and by discipline)
- Information compiled and analyzed for Report

# Critical Needs Areas Identified

- Student Support
- Faculty Support
- STEM Curricula Enhancement
- Integration of Research and Education
- Partnerships
- Laboratory Space, Instrumentation, and Equipment

# Student Support

- Recruitment and Retention
- Internships
- Mentoring and Tutoring
- Financial Support
- Presentation and Communication Skills
- Focus on Transitional Stages
- Career Awareness

# Faculty Support

- Faculty Training in Pedagogy
- Summer Research Opportunities
- Release Time
- Partnerships Involving STEM Faculty
- Special Preparation of Students for Graduate School in STEM
- Preparation of K-12 STEM Teachers
- Service on NSF Proposal Review Panels

# STEM Curricula Enhancement

- Revitalization of STEM Courses
- STEM Curricular Ties to Undergraduate Student Research Activities
- What Works in the Teaching of Developmental Mathematics
- Operation of Campus STEM Tutoring Center
- Alignment of College and High School STEM Curricula
- STEM Curricula for Pre-service and In-service K-12 Teachers

# Integration of Research and Education

- Faculty Enhancement and Increased Awareness of Promising Practices
- Impact on Student Learning

# Partnerships

- Outreach to Local School Systems and Other Institutions of Higher Education
- Student Internships
- Focus on Pipeline Issues
- Articulation Arrangements

# Laboratory Space, Instrumentation, and Equipment

- STEM Research Laboratory Space
- Research Instrumentation and Equipment

# Input from Faculty at Two-Year Institutions

- Initiative should include a separate focus directed at two-year colleges
- Their institutions should be given greater opportunities to serve as lead institutions on NSF awards
- Initiative should include a focus on identifying and using strategies for improving the curriculum and teaching of developmental mathematics
- A need exists for basic scientific laboratory equipment

# Input from Faculty at Four-Year Institutions

- Need for improvements in the transition of students along the educational pathway
- Discussion of certain topics not explored at the Forum (e.g., technological changes in the next 5-10 years and their impact on teaching and learning, including on-line learning)
- Interest in learning more about existing NSF programs and developing competitive proposals to these programs

# Forum Follow-Up: The Current Workshop

Purpose: To provide STEM faculty from HSIs with information on existing NSF programs that offer support in several of the areas of critical needs

- To address and categorize the critical areas for building STEM capacity at HSIs
- To meet with NSF program directors to discuss existing opportunities and proposal ideas

# Next Steps

- QEM will gather feedback from participants on the Draft Forum Report
- QEM will analyze feedback and use the analysis to develop recommendations and prepare a final report