



**Science, Technology, Engineering, Mathematics (STEM)**

**GRC's Focus on National Priorities:  
Higher Education, Workforce  
Development (JOBS), and STEM**

Presentation to Plymouth State University

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# Where To Find STEM Labor Data



- ❖ **Department of Labor**, Bureau of Labor Statistics (Occupational Employment Statistics; Current Population Survey)
- ❖ **National Science Foundation**, National Center for Science and Engineering Statistics (Survey of Doctorate Recipients, National Survey of College Graduates, National Survey of Recent College Graduates)
- ❖ **Department of Commerce**, Census Bureau (American Community Survey)

(Source: National Science Foundation, Science and Engineering Indicators 2012, p. 3-8)

# Quick Facts About College STEM

- ❖ Undergraduate students majoring in STEM persist and complete degrees at a **higher rate** than non-S&E students.
- ❖ The number of bachelor degrees in STEM has risen steadily since 1997, reaching a new peak of 500,000 STEM Bachelor's degrees in 2009.



- ❖ **Gender and Racial Gap:** Men earn more degrees in engineering, computer sciences, and physics. Women earn more in chemistry, biology, agriculture, social sciences, and psychology. Minorities earn fewer bachelor's degrees than non-minorities. **Latino males are the least likely to attain a college degree** (10%) due to immigration issues.

# RACIAL GAPS IN UNDERGRADUATE STEM ACHIEVEMENT

Percentage of the U.S. population with STEM bachelor's degrees or higher:

- ✓ 37% for whites
- ✓ 19% for African Americans
- ✓ 12% for Latinos (NOTE: There has been an increase since 2009 of Latino B.S. degrees in computer sciences)



Interesting trend: For STEM majors who transfer to other fields, most transfer into social/behavioral sciences rather than drop out of postsecondary education entirely.

# **STEM Undergraduate Courses and Master's Programs\* at Plymouth State University**

- Biology\***
- Biotechnology**
- Biological Science Education**
- Chemistry**
- Chemistry Education**
- Environmental Chemistry**
- Computer Science**
- Information Technology**
- Environmental Biology**
- Environmental Science and Policy\***
- Environmental Science**
- Geography**
- Health Education**
- Mathematics**
- Meteorology\***
- Nursing**
- Social Sciences: Sociology & Anthropology; Social Sciences; Psychology\*; and Political Science**

(Source: Plymouth State University website: <http://www.plymouth.edu/academics/undergraduate-programs/degree-programs-options/#q>)

# Potential Plymouth State University STEM Interdepartmental Collaborations

## Science Education

- Biological Science Education
- Chemistry Education
- Health Education
- Nursing

## Social and Behavioral Sciences

- Anthropology & Sociology
- Psychology
- Social Sciences
- Environmental Sciences and Policy
- Political Science

## STEM

- Biology
- Biotechnology
- Chemistry
- Mathematics
- Environmental sciences
- Meteorology
- Geography

# Potential Public-Private Sponsors for STEM

## Conference Grants; Travel Awards; Faculty Development

### Health Sciences

- Health and Human Services (HRSA, NIH, SAMHSA, ACF)
- *Burroughs Wellcome Fund, et.al*
- *Industry*

### Social Sciences

- National Science Foundation (NSF Directorate for Social, Behavioral & Economic Sciences)
- *American Sociological Association; American Psychological Association, et.al*
- *Industry*

### STEM

- NSF (Multiple Directorates), EPA, Energy, NASA, NOAA
- *Various Professional Science and Mathematics Societies*
- *Industry*

## Workforce Development: STEM For Faculty, Students, and Institutional Development

Due to major budget cuts at most colleges and universities, many departments are finding it easier to share physical resources, faculty, and funding to develop and sustain academic and research programs in STEM fields. Here are some ideas to consider in the pursuit of single department and interdisciplinary funding.



### INSTITUTIONAL GRANT FOR FIRST- GENERATION UNDERGRADUATE STUDENTS

Ronald E. McNair Postbaccalaureate Achievement Grant (for undergraduates who are committed to pursuing a postgraduate degree regardless of field, but there is an emphasis on STEM)



### Nursing Education

(Health Resources  
Services  
Administration,  
HHS)

Funds nurse training programs to develop innovative regional approaches to using technology, including competency-based distance learning, to enhance nursing education.

### Environmental Sciences

(American Chemical  
Society)

To encourage creativity in research and technology or methods of analysis to provide a scientific basis for informed environmental control decision-making processes, or to provide practical technologies that will reduce health risk factors.

### Mathematics

(National Security  
Agency).

The Research Grants program offers three types of grants: the Young Investigators Grant, the Standard Grant, and the Senior Investigators Grant.



# NSF 2013 Funded Opportunity

NSF, 11-587. Through the *Cyberlearning: Transforming Education* program, NSF seeks to integrate advances in technology with advances in what is known about how people learn to better understand how people learn with technology and how technology can be used productively to help people learn, through individual use and/or through collaborations mediated by technology; better use technology for collecting, analyzing, sharing, and managing data to shed light on learning, promoting learning, and designing learning environments; and design new technologies for these purposes, and advance understanding of how to use those technologies and integrate them into learning environments so that their potential is fulfilled.

- Full Proposal Deadline Date: January 16, 2013
- Design and Implementation Projects (DIPs)
  
- Full Proposal Target Date: March 15, 2013
- Capacity-Building Projects (CAPs)
  
- Letter of Intent Deadline Date: May 14, 2013
- for Integration and Deployment Projects (INDPs) only
  
- Full Proposal Deadline Date: July 15, 2013
- Integration and Deployment Projects (INDPs)



## GRC STEM Resources

### *Grant Week*

**Published once a week.** Articles that impact GRC members are included in Grant Week. STEM reports are discussed as well as important meetings and policy changes that involve higher education more generally.

(Publication date: January 7, 2013)

### **NIH Expands SCORE Eligibility, More GRC Members Likely to Benefit**

On January 4, 2013, the National Institutes of Health (NIH) renewed its longstanding [Support of Competitive Research \(SCORE\)](#) Programs. SCORE is a developmental program that seeks to increase the research competitiveness of minority investigators through three investigator-initiated components: the [Research Advancement Award](#), the [Pilot Project Award](#); and the [Research Continuance Award](#). The 2013 deadlines are March 4, May 25, and September 25.

**NIH made a major change in eligibility for the SCORE programs in 2013. In the past, eligibility was limited to investigators at minority-serving institutions with 50 percent or more enrollment of students from groups underrepresented in biomedical and behavioral research. The new eligibility supports “faculty at minority-serving institutions and institutions with a historical mission of training students from backgrounds underrepresented in biomedical research.** These institutions train a substantial number of professionals who pursue research careers or provide health care and health related services to populations who are underserved and not well represented in NIH funded research.” Applicant institutions must have received less than \$6 million in NIH R01 support in the last two fiscal years. An institution can hold no more than 20 SCORE awards.

Institutions can [retrieve demographic information](#) through the National Science Foundation.

Many GRC members have received SCORE funding in the past, and the number is expected to rise in response to the eligibility expansion. For more details, contact Zlotnik at 301/594-5132 or [zlotnikh@nigms.nih.gov](mailto:zlotnikh@nigms.nih.gov).

## GRC STEM Resources

### ***GRC Deadlines***

**Published once a month.** Deadlines provides information on Federal grant opportunities three months out from the closing date. This comes out once a month.

(Publication date: December 1, 2012)

Geological Society of America Next Deadline: Feb 01, 2013 Graduate Student Research Grants (2/1 annually) provide partial support of master's and doctoral thesis research in the geological sciences for graduate students enrolled in universities in the U.S., Canada, Mexico, and Central America.

**Undergraduate Student Research Grants (deadlines vary by region) support individual research by sophomore or junior undergraduates.** Applicants must be GSA members.

See <http://www.geosociety.org/grants/> for details. Email: [dlorenz@geosociety.org](mailto:dlorenz@geosociety.org) CFDA Number:N/A Contact: Diane Lorenz, Program Officer PO Box 9140 Boulder, CO 80301-9140 303/357-1028

# WHY STEM EDUCATION MATTERS



**Three reasons** why STEM Education Matters:

1. Half of the workers in S&E occupations earned \$73,290 or more in 2010, more than double the median earnings (\$33,840) of the total U.S. Workforce.
2. Workers with S&E degrees, regardless of their occupations, earn more than workers with comparable-level degrees in other fields.
3. Industries with above-average proportions of S&E jobs tend to pay higher average salaries to both their S&E and non-S&E workers.

(Source: NSF, 3-5)

# FAQs

1. How do I prepare my campus to be more STEM-ready?
2. How can I use existing resources to compete for Federal grants?
3. How will I better engage the donor community to partner with my university?

ANSWER #1: Use what you have!!

ANSWER #2: Think Intramural Collaboration! Create interdepartmental faculty teams to go after grants

ANSWER #3: Invite Federal Program Officers to campus Research Days or to serve as Master's theses advisors





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