STEM EDUCATION REFORM: NATIONAL, STATE AND INSTITUTIONAL CONTEXTS

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UGA Regional STEM Institute
14 April 2012
An Ongoing National Challenge

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
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<tbody>
<tr>
<td>2012</td>
<td>Engage to Excel: Producing One Million College Graduates with Degrees in Science, Technology, Engineering and Mathematics</td>
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<td>2011</td>
<td>Complete College Georgia</td>
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<td>2009</td>
<td>Race to the Top</td>
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<td>2007</td>
<td>Rising Above the Gathering Storm</td>
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<td>2004</td>
<td>The Engineer of 2020: Visions of Engineering in the New Century</td>
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<td>2001</td>
<td>Federal No Child Left Behind Act</td>
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<td>1983</td>
<td>A Nation At Risk: The Imperative for Educational Reform</td>
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UGA STEM Symposium, 14 April 2012
By 2020, it’s anticipated that 60% of jobs will require some form of higher education (certificate, associate’s, bachelor’s).

Currently, 42% of our young adults (age 25-34) qualify.

250,000 additional graduates*

*Projected need, assuming current graduation levels are maintained, and population change is met.
100 Georgia Public 9th Graders

56 Graduate High School

24 Start a 4-year College

19 Become Sophomores

6 Graduate Within Time

13 Start a 2-year College

6 Become Sophomores

3 Graduate Within Time

91% Loss
USG Percent of STEM Degrees, 2011

STEM degrees: 10,821
All degrees: 54,855
USG STEM Bachelors Degrees, 2011

STEM Bachelors Degrees: 6,898
The STEM Dilemma

Currently, of all intended STEM majors:

40 percent complete degree

PCAST’s Prescription:

1,000,000 STEM graduates 10 years
Institutional Context

APS School Closings

Career Pathways

40 percent unemployment

Did not meet AYP
STEM Faculty Dedicated to Improving Instruction and Student Learning

Four Tenure-Track Faculty Hired

- Mathematics – David Gay
- Engineering Education – Joe Walther
- Science Education – Ji Shen
- MS Science Education – Ajay Sharma
- Awards: NSF CAREER, NSF REESE
STEM Mini-Grants Program

- Encouraging innovative instruction in introductory STEM courses
- Contribute to the Scholarship of Teaching and Learning
- Approximately 10 mini-grants awarded each year
- Amount awarded per grant = $9,000
STEM Learning Communities

UGA Faculty and K-12 Educators Work Collaboratively

- Meet on a regular basis
- Discuss, share, and implement ways to improve teaching and student learning
- 8-10 funded each year
Fostering Our Community’s Understanding of Science

Project FOCUS

- Service-learning course
- STEM undergraduates teach inquiry-based lessons in K-5 classrooms
The UGA Office of STEM Education

Provide Campus-Wide Leadership for STEM Activities

• Clearinghouse of STEM opportunities
• Partner with local school districts
• Proposal submitted: CIRTL

• Website: www.ose.uga.edu
Center for the Integration of Research, Teaching, and Learning (CIRTL)

Diverse set of research universities committed to:

- Being national change agents in STEM graduate education around teaching and learning.
- The core ideas (pillars):
  - teaching-as-research
  - learning community
  - learning-through-diversity
- Collaboration with network universities - sharing programs, resources, successes, and initiatives.

The CIRTL Network
http://www.cirtl.net/
Acknowledgements

- USG STEM Initiative II
- The University of Georgia