Funding Opportunities in the NSF Division of Undergraduate Education

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Division of Undergraduate Education (DUE)

Vermont EPSCoR Annual State Meeting

Burlington, VT

August 16, 2012

NSF DUE Mission – Promote excellence in undergraduate STEM education for all students

Each solicitation has its own objectives and criteria, many involving pedagogical research.

All proposals are judged on common intellectual merit and broader impacts.

Some solicitations have additional criteria.

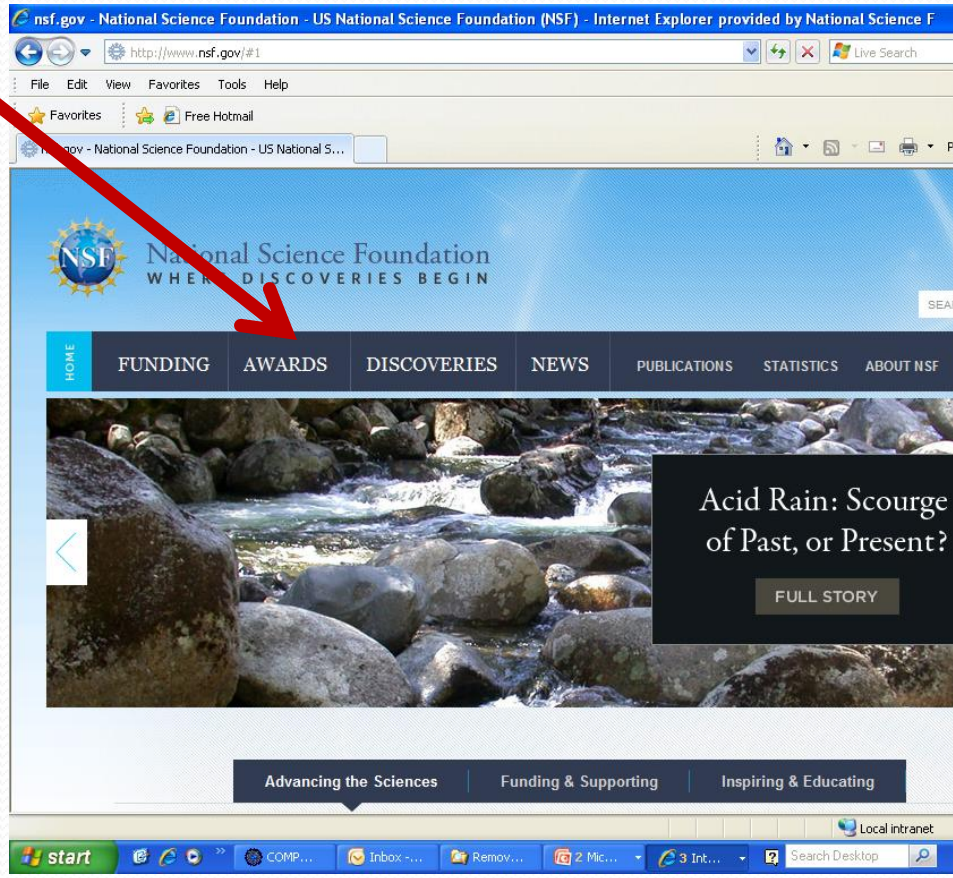
The success of the NSF's effort depends on the peer review process.

Matching proposal goals and activities with those of the solicitation is important for successful funding

“Let’s face it, you never fit into this organization”

The DUE web page – www.NSF.gov - provides information about solicitation components and awards

- Information on current and expired awards is found by clicking on the "Awards" tab at the top of the page and conducting a key word search.



awards found, displaying all awards.

Award Number	Title	NSF Organization	Program(s)	Start Date	Principal Investigator	State	Organization	Awarded Amount to Date
0902904	Improving Access to Technological Education Programs and Careers for Community College Students with Learning Disabilities	DUE	ADVANCED TECH EDUCATION PROG	07/15/2009	Fadden, Steven	VT	Landmark College	$149,994.00
0302846	The Vermont Information Technology Project - Foundation for the Future	DUE	EXP PROG TO STIM COMP RES, ADVANCED TECH EDUCATION PROG	07/01/2003	Sargent, Brent	VT	Vermont Technical College	$598,606.00
0071062	Innovative training for biotechnologists through coordinated curricula and partnerships with industry and academia	DUE	ADVANCED TECH EDUCATION PROG	07/01/2000	Gnagey, Ann	VT	Vermont Technical College	$183,206.00
9875768	CAREER: Synthesis and Analysis of Mixed-Phase Microporous/Mesoporous Materials and Implementation of Distance Learning Techniques	CHE	EXP PROG TO STIM COMP RES, MATERIALS SYNTHESIS & PROCESSN	09/01/1999	Landry, Christopher	VT	University of Vermont & State Agricultural College	$346,000.00

Export options: CSV | Excel | XML

Hint: Most browsers allow you to save the exported file by right-clicking on the link and choosing "save link target" from the menu options. *See the help for more information.*

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Today's presentation has two components

- 1. NSF DUE programs of interest:

  ATE, S-STEM, STEP, TUES

- 2. The review process

Community Colleges increasingly serve as the gateway to post-secondary education as well as employment

- ~43% of the nation's 17.6 million undergraduates attend a community college (fall 2009; NCES. 2011)

- Average annual tuition - public in state (AACC, 2012)
- community colleges: $2,963
  4-year colleges: $8,244

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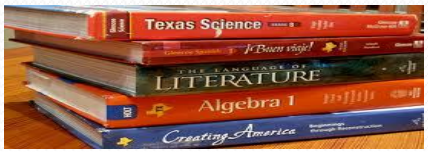
1. **ATE: Advanced Technological Education**

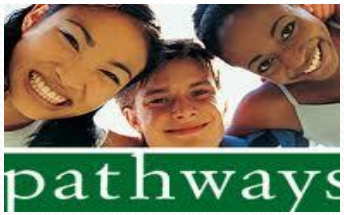
- **Focus on two-year programs. Emphasis on the education of technicians for the high-technology fields that drive the nation's economy.**

1. ATE supports technician education

- **Curriculum development based on workforce needs (certificate and degree programs); modern equipment for instructions; partnerships between academic institutions and employers; internships and research opportunities.**

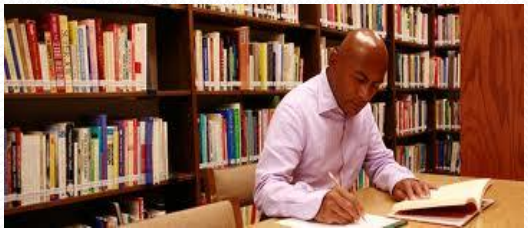


- **College faculty and secondary school teacher**
- **professional development. Teacher preparation.**



- **Career pathways from secondary schools to two-year colleges and to four-year institutions; articulation agreements.**

- **Educational research to advance knowledge related to technician education**



1. <u>Small Grants for Institutions New to the ATE Program</u> provide community colleges with a chance to "get their foot in the door."

- **Stimulate implementation, adaptation, and innovation in all areas supported by ATE.**
- **Broaden the base of participation of community colleges in ATE.**
- **Strengthen the role of community colleges in meeting the needs of business and industry**
- **<u>Available only to community college campuses that have not had an ATE award within the last 10 years or never had one.</u>**
- **Limited to $200,000 over 3 years. Funding rate history between 50 – 70 %**

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2. S-STEM: Scholarships in Science, Technology, Engineering, & Math

- **Goal: Provides funds to institutions to provide scholarships to academically talented, but financially needy, students**
- **Students can be pursuing associate, bachelor's, or graduate degrees**
- **Scholarships can be up to $10,000/yr - up to 4 yrs within the limits of students official level of need. (They can be less than $10K and less than 4 yrs)**

2. S-STEM major features:

- **Most STEM disciplines are eligible - except Social & Behavioral sciences**
- **One proposal per constituent school or college that awards STEM degrees (e.g., School of Engineering, School of Arts & Sciences, School of Professional Studies)**
- **Institution must provide student support structures and is responsible for selecting scholarship recipients. Optional enhancements: research opportunities, tutoring, internships, etc.**

3. STEP: STEM Talent Expansion Program

<u>Basic Goals</u>: Increase the number of graduates (US Citizens or permanent residents) in STEM

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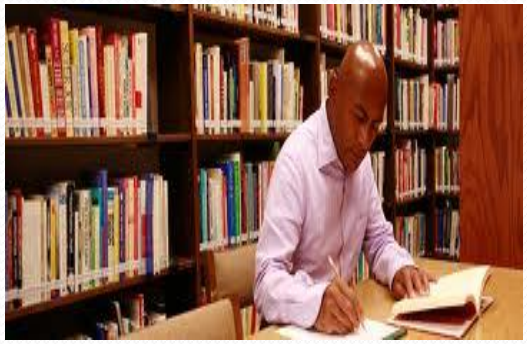

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- **Type 1 - implementation at academic institutions**
- **Type 2 – <u>educational research</u> projects on associate or baccalaureate degree attainment in STEM**

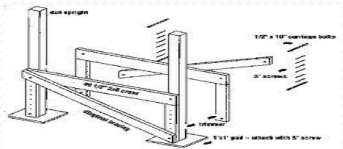
3. STEP awards implement best practices based on an institutional/departmental self-study

- Bridge programs that enable additional preparation for students from HS or CC

- Programs to improve the quality of student learning
  - Peer tutoring, learning communities, etc.
  - new pedagogical approaches

- Programs to encourage undergraduate research

- Recruitment. Student support mechanisms



4. TUES – Transforming Undergraduate Education in STEM – WORK IN PROGRESS

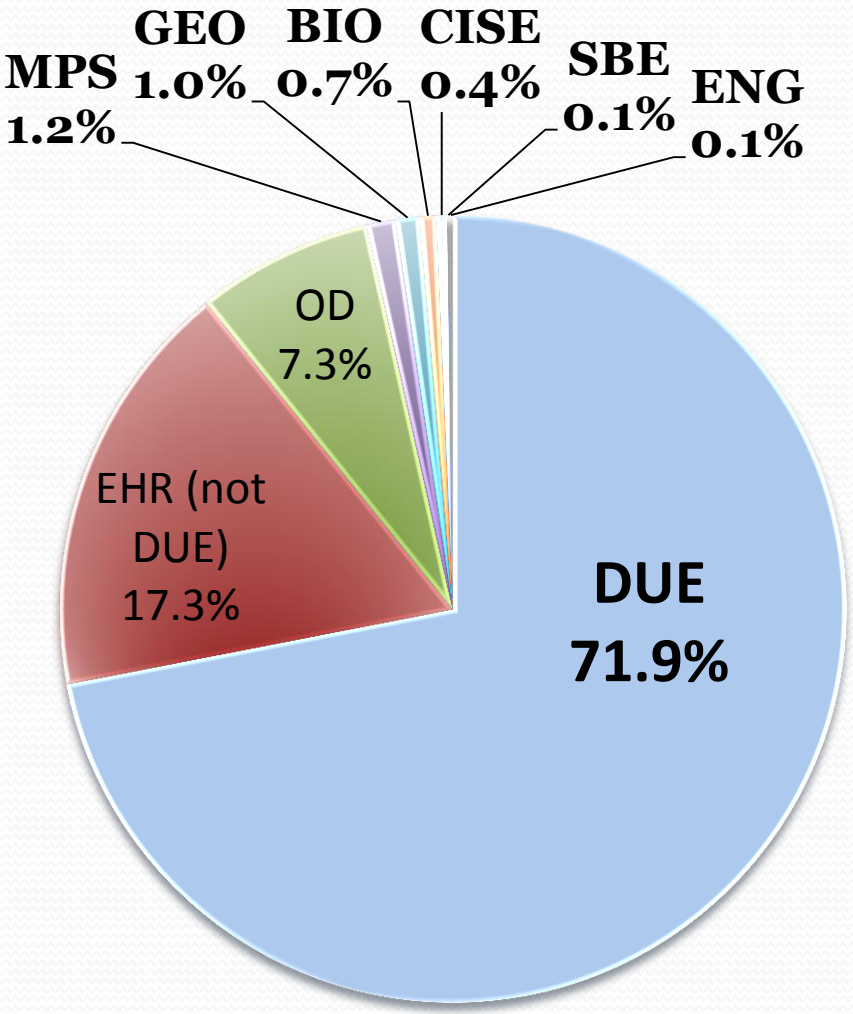
Focus on one or more of the following:

- **Creating learning materials and strategies**
- **Implementing New Instructional Strategies**
- **Developing Faculty Expertise**
- **Assessing and Evaluating Student Achievement**
- **<u>Conducting Research on Undergraduate STEM Education in teechnical education</u>**

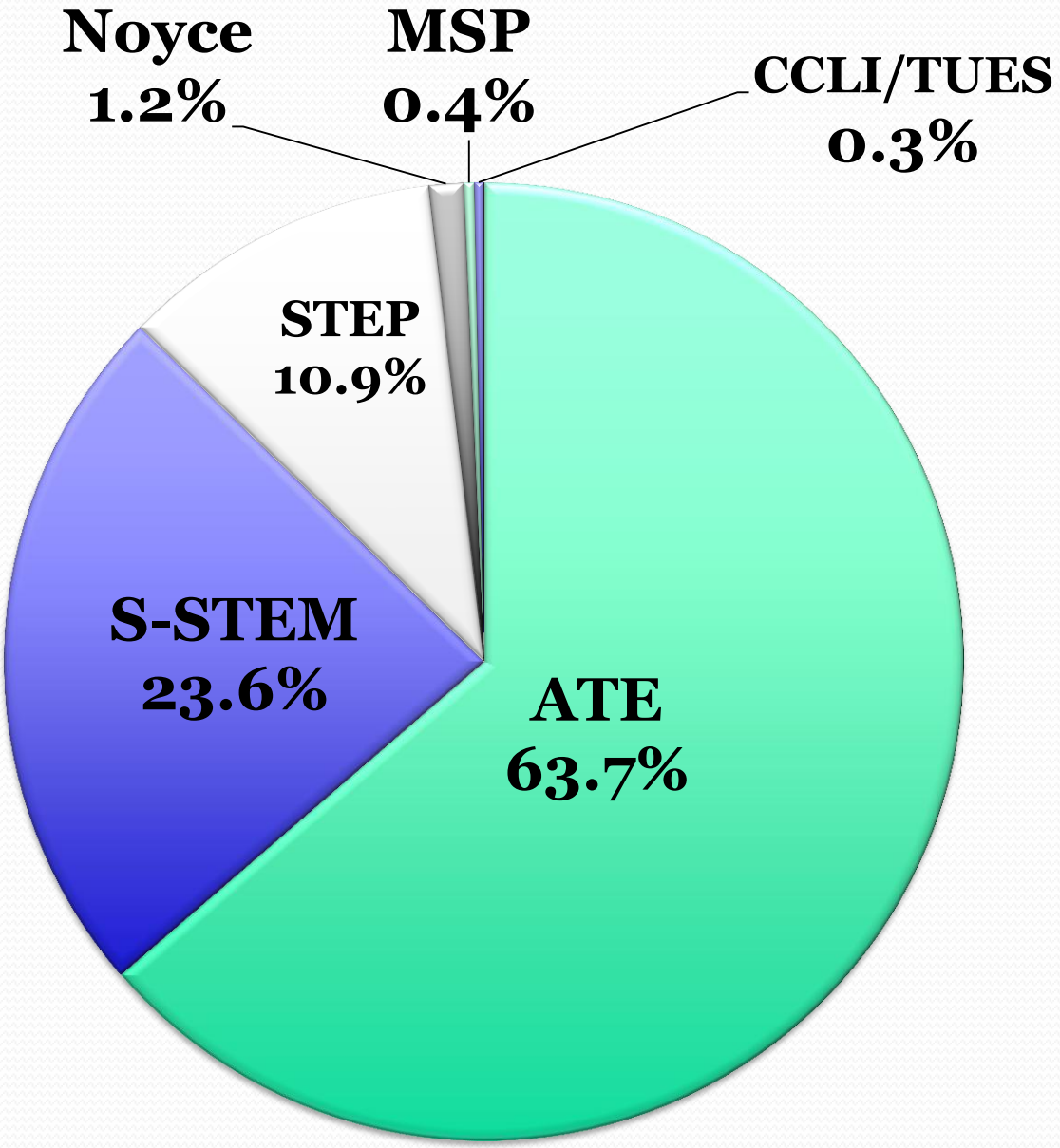
4. TUES Important Project Features

- Quality, Relevance and Impact
- Student Focus
- Use of and contribution to knowledge about STEM education
- STEM education community building
- Sustainability
- Expected measurable outcomes
- Project evaluation

NSF's Division of Education (DUE) provides the most funding for community colleges



ATE is NSF DUE's largest program for community colleges



NSF DUE Funding – FY 2011

	AWARDS	DECLINES	TOTAL	% AWARDS
ATE	71	162	233	30%
MSP - total	15	148	163	9%
S-STEM	90	270	360	25%
STEP	17	190	207	8%
TUES Resource	10	5	15	67%
Type 1	156	1003	1159	13%
Type 2	54	242	296	18%
Type 3	3	59	62	5%
TOTAL	416	2079	2495	17%

IM - Requirement for all Proposals

Must be addressed in the project summary

Intellectual Merit

- How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields?
- How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.)
- To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts?
- How well conceived and organized is the proposed activity? Is there sufficient access to resources?

BI - Requirement for all Proposals

Must be addressed in project summary

Broader Impact

- How well does the activity advance discovery and understanding while promoting teaching, training, and learning?
- How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?
- To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?
- Will the results be disseminated broadly to enhance scientific and technological understanding?
- What may be the benefits of the proposed activity to society?
- Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website

Features of Competitive Proposals

- **Original ideas. Potentially high impact.**
- **Succinct, focused project plan. Sufficient detail provided.**
- **Realistic amount of work – timeline and responsibility delineated.**
- **Cost effective – budget aligned with activities.**
- **Demonstrated knowledge of field (literature survey) and experience of PIs. Project builds on prior knowledge.**
- **Rationale and evidence of potential effectiveness.**
- **Likelihood the project will be sustained.**
- **Solid evaluation plan including formative and summative assessment.**

TUES Reviewer Survey: Top Ten Strengths

1. Commitment to undergraduate education
2. Outreach to diverse students
3. Innovative
4. Highly qualified PIs in technical areas
5. Identified significant issues
6. Detailed development plans
7. Develop portable products/dissemination
8. Building onto existing ideas/literature
9. Implement active learning
10. Utilize knowledge of how we learn
11. Writing Style and structure well done

Reviewer Survey: Top Ten Weaknesses

1. Lack of assessment
2. Not transformative/low impact
3. Not meeting grant criteria (did not follow solicitation)
4. Lacks dissemination plan
5. Lacks defined outcomes
6. Does not build on prior work/not analyzing literature
7. Not sustainable/failure to develop institutional support
8. No actual commitment to reach minorities
9. Specific to institution/not transferable
10. Budget allocation problems

Where are the needs?

Articulation agreements increase the number of credits transferring to baccalaureate degree programs. Statewide and regional are most effective.

- **In 2008-09, 17,634 CUNY baccalaureate graduates averaged 130 credits, significantly higher than the required 120. The excess credits cost students and the state $72.5 million.**

- **Arizona's transfer and articulation system helped transfer students decrease the number of credits at graduation by approximately 12 credits, over a 5-year period (Hezel, 2007)**

- **Six-year degree completion rates for students who transferred all of their credits to a four-year institution were 40% higher compared to those who had only some of their credits transferred (82 % for all credits transferred vs. 42% for some credits transferred). (Doyle, 2006)**

The Broadening Impact: NSF-Funded Projects at Two-Year Colleges Conference was sponsored to evaluate needs

Complete Report:

Google "2011 NSF Broadening Participation Conference"

Participant's consensus of future directions to meet those needs:

- **Professional development for K-12 and community college faculty.**
- **Role models for nontraditional students and students from underrepresented minorities.**
- **Research opportunities.**
- **Math success initiatives**
- **STEM curricula and pedagogy using evidence based practices**
- **Information on STEM careers for students and faculty**
- **Development and adoption of learning outcomes for math/science literacy among non-STEM majors.**
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Thank you for your attention

For more information:

- **DUE Web Site - http://www.nsf.gov/div/index.jsp?div=DUE**
- **Vet ideas with a program officer**
- **Volunteer to review proposals.**

Opinions expressed in this presentation are those of the presenter and are not official NSF policy