

111TH CONGRESS
2D SESSION

H. R. 4955

To authorize the National Science Foundation to provide grants for implementing or expanding research-based reforms in undergraduate STEM education for the purpose of increasing the number and quality of students studying toward and completing baccalaureate degrees in STEM.

IN THE HOUSE OF REPRESENTATIVES

MARCH 25, 2010

Ms. KOSMAS introduced the following bill; which was referred to the Committee on Science and Technology, and in addition to the Committee on Education and Labor, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

To authorize the National Science Foundation to provide grants for implementing or expanding research-based reforms in undergraduate STEM education for the purpose of increasing the number and quality of students studying toward and completing baccalaureate degrees in STEM.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Transforming Under-
5 graduate STEM Education Act”.

1 **SEC. 2. TRANSFORMING UNDERGRADUATE EDUCATION IN**
2 **STEM.**

3 Section 17 of the National Science Foundation Au-
4 thorization Act of 2002 (42 U.S.C. 1862n–6) is amended
5 to read as follows:

6 **“SEC. 17. TRANSFORMING UNDERGRADUATE EDUCATION**
7 **IN STEM.**

8 “(a) IN GENERAL.—The Director shall award grants,
9 on a competitive, merit-reviewed basis, to institutions of
10 higher education to implement or expand research-based
11 reforms in undergraduate STEM education for the pur-
12 pose of increasing the number and quality of students
13 studying toward and completing baccalaureate degrees in
14 STEM.

15 “(b) USES OF FUNDS.—Activities supported by
16 grants under this section may include—

17 “(1) development, implementation, and assess-
18 ment of innovative, research-based approaches to
19 transforming the teaching and learning of discipli-
20 nary or interdisciplinary STEM at the under-
21 graduate level;

22 “(2) expansion of successful STEM reform ef-
23 forts beyond a single course or group of courses to
24 achieve reform within an entire academic unit, or ex-
25 pansion of successful reform efforts beyond a single

1 academic unit to other STEM academic units within
2 an institution;

3 “(3) creation of multidisciplinary or inter-
4 disciplinary courses or programs that formalize col-
5 laborations for the purpose of improved student in-
6 struction and research in STEM;

7 “(4) expansion of undergraduate STEM re-
8 search opportunities to include interdisciplinary re-
9 search opportunities and research opportunities in
10 industry, at Federal labs, and at international re-
11 search institutions or research sites;

12 “(5) implementation or expansion of bridge, co-
13 hort, tutoring, or mentoring programs proven to en-
14 hance student recruitment or persistence to degree
15 completion in STEM;

16 “(6) improvement of undergraduate STEM
17 education for nonmajors, including education ma-
18 jors;

19 “(7) implementation of technology-driven re-
20 form efforts, including the installation of technology
21 to facilitate such reform, that directly impact under-
22 graduate STEM instruction or research experiences;

23 “(8) development and implementation of faculty
24 development programs focused on improved instruc-

tion, mentoring, evaluation, and support of undergraduate STEM students;

“(9) support for graduate students and postdoctoral fellows to participate in instructional or assessment activities at primarily undergraduate institutions; and

“(10) research on teaching and learning of STEM at the undergraduate level related to the proposed reform effort, including assessment and evaluation of the proposed reform activities and research on scalability and sustainability of approaches to reform.

“(c) SELECTION PROCESS.—

“(1) APPLICATIONS.—An institution of higher education seeking a grant under this section shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require. The application shall include, at a minimum—

“(A) a description of the proposed reform effort;

“(B) a description of the research findings that will serve as the basis for the proposed reform effort or, in the case of applications that propose an expansion of a previously imple-

1 mented reform effort, a description of the pre-
2 viously implemented reform effort, including
3 data on student recruitment, persistence to de-
4 gree completion, and academic achievement;

5 “(C) evidence of institutional support for,
6 and commitment to, the proposed reform effort,
7 including long-term commitment to implement
8 successful strategies from the current reform
9 effort beyond the academic unit or units in-
10 cluded in the grant proposal;

11 “(D) a description of existing or planned
12 institutional policies and practices regarding
13 faculty hiring, promotion, tenure, and teaching
14 assignment that reward faculty contributions to
15 undergraduate STEM education; and

16 “(E) a description of the plans for assess-
17 ment and evaluation of the proposed reform ac-
18 tivities, including evidence of participation by
19 individuals with experience in assessment and
20 evaluation of teaching and learning programs.

21 “(2) REVIEW OF APPLICATIONS.—In selecting
22 grant recipients under this section, the Director
23 shall consider at a minimum—

24 “(A) the likelihood of success in under-
25 taking the proposed effort at the institution

1 submitting the application, including the extent
2 to which the faculty, staff, and administrators
3 of the institution are committed to making the
4 proposed institutional reform a priority of the
5 participating academic unit or units;

6 “(B) the degree to which the proposed re-
7 form will contribute to change in institutional
8 culture and policy such that a greater value is
9 placed on faculty engagement in undergraduate
10 education;

11 “(C) the likelihood that the institution will
12 sustain or expand the reform beyond the period
13 of the grant; and

14 “(D) the degree to which scholarly assess-
15 ment and evaluation plans are included in the
16 design of the reform effort.

17 “(3) PRIORITY.—For proposals that include an
18 expansion of existing reform efforts beyond a single
19 academic unit, the Director shall give priority to
20 proposals for which a senior institutional adminis-
21 trator, including a dean or other administrator of
22 equal or higher rank, serves as the principal investi-
23 gator.

24 “(4) GRANT DISTRIBUTION.—The Director
25 shall ensure, to the extent practicable, that grants

- 1 awarded under this section are made to a variety of
- 2 types of institutions of higher education.”.

