# Scientific and Advanced-Technology Act of 1992

[Public Law 102–476]

[As Amended Through P.L. 117–167, Enacted August 9, 2022]

AN ACT To establish a national advanced technician training program, utilizing the resources of the Nation's two-year associate-degree-granting colleges to expand the pool of skilled technicians in strategic advanced-technology fields, to increase the productivity of the Nation's industries, and to improve the competitiveness of the United States in international trade, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

**SEC. 1. [42 U.S.C. 1861 note] SHORT TITLE.**

This Act may be cited as the "Scientific and Advanced-Technology Act of 1992".

**SEC. 2. [42 U.S.C. 1862h] FINDINGS AND PURPOSES.**

(a) FINDINGS.—The Congress finds that—

(1) the position of the United States in the world economy faces great challenges from highly trained foreign competition;

(2) the workforce of the United States must be better prepared for the technologically advanced, competitive, global economy;

(3) the improvement of our work force's productivity and our international economic position depend upon the strengthening of our educational efforts in science, technology, engineering, and mathematics or STEM, especially at the associate-degree level;

(4) shortages of scientifically and technically educated [1] trained workers in a wide variety of fields will best be addressed by collaboration among the Nation's associate-degree-granting colleges and private industry to produce skilled, advanced technicians; and

(5) the National Science Foundation's traditional role in developing model curricula, disseminating instructional materials, enhancing faculty development, and stimulating partnerships between educational institutions and industry, makes an enlarged role for the Foundation in STEM education and training particularly appropriate.

(b) PURPOSES.—It is the purpose of this Act to—

(1) improve science and technical education at associate-degree-granting colleges;

(2) improve secondary school and postsecondary curricula in STEM fields;

[1] So in law. Probably should be followed by "and". See the amendment made by section 10312(f)(1)(A)(ii) of Public Law 117-167.

(3) improve the educational opportunities of postsecondary students by creating comprehensive articulation agreements and planning between 2-year and 4-year institutions; and

(4) promote outreach to secondary schools to improve STEM instruction.

**SEC. 3. [42 U.S.C. 1862i] STEM EDUCATION.**

(a) NATIONAL ADVANCED STEM EDUCATION PROGRAM.—The Director of the National Science Foundation (hereafter in this Act referred to as the "Director") shall award grants to associate-degree-granting colleges, and consortia thereof, to assist them in providing education in advanced-technology fields and education to prepare the skilled technical workforce to meet workforce demands, and to improve the quality of their core education courses in STEM fields. The grant program shall place emphasis on the needs of students who have been in the workforce (including veterans and individuals engaged in work in the home) and on building a pathway from secondary schools to associate-degree-granting institutions, to careers that require technical training, and shall be designed to strengthen and expand the scientific and technical education and training capabilities of associate-degree-granting colleges through such methods as—

(1) the development and study of model instructional programs in advanced-technology fields and in core STEM courses;

(2) the professional development of faculty and instructors, both full- and part-time, who provide instruction in STEM and advanced- technology[2] fields;

(3) the establishment of innovative partnership arrangements that—

(A) involve associate-degree-granting colleges and other appropriate public and private sector entities to support the advanced- technology industries that drive the competitiveness of the United States in the global economy;

(B) provide for private sector donations, faculty opportunities to have short-term assignments with industry, sharing of program costs, equipment loans, and the cooperative use of laboratories, plants, and other facilities, and provision for state-of-the-art work experience opportunities for students enrolled in such programs; and

(C) encourage participation of individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b);

(4) the acquisition of state-of-the-art instrumentation essential to programs designed to prepare and upgrade students in STEM and advanced-technology fields; and

(5) the development and dissemination of instructional materials in support of improving the advanced STEM and advanced- technology and training capabilities of associate-degree-granting colleges, including programs for students who are not pursuing a science degree.

(b) CENTERS OF SCIENTIFIC AND TECHNICAL EDUCATION.—

[2] The space between "advanced-" and "technology" is so in law.

(1) IN GENERAL.—The Director shall make awards for the establishment of centers of excellence, in advanced-technology fields, among associate-degree-granting colleges. Centers shall meet one or both of the following criteria:

(A) Exceptional instructional programs in advanced-technology fields.

(B) Excellence in undergraduate STEM education.

(2) PURPOSES.—The centers shall serve as national and regional clearinghouses and models for the benefit of both colleges and secondary schools, and shall provide seminars and programs to disseminate model curricula and model teaching methods and instructional materials to other associate-degree-granting colleges.

(3) NETWORKS.—The centers may enter into partnerships with other institutions of higher education, nonprofit organizations, and stakeholder groups, or a consortium thereof, to develop networks to—

(A) coordinate research, training, and education activities funded by awards under subsection (a);

(B) share information and best practices; or

(C) promote collaboration between academic institutions, workforce development programs, labor organizations, and industry to communicate and meet workforce education and training needs.

(c) ARTICULATION PARTNERSHIPS.—

(1) PARTNERSHIP GRANTS.—(A) The Director shall make grants to eligible partnerships to encourage the development of career and educational pathways with multiple entry and exit points leading to credentials and degrees, and to assist students pursuing pathways in STEM fields to transition from associate-degree-granting colleges to bachelor- degree-granting institutions, through such means as—

(i) examining curricula to develop articulation agreements that ensure that academic credit earned at the associate-degree-granting college is transferable to bachelor-degree-granting institutions;

(ii) informing teachers from the associate-degree-granting college on the specific requirements of the career and educational pathways supported by the articulation agreements; and

(iii) providing summer educational programs for students from the associate-degree-granting college to encourage such students' subsequent matriculation at bachelor-degree-granting institutions.

(B) Each eligible partnership receiving a grant under this paragraph shall, at a minimum—

(i) counsel students, including students who have been in the workforce (including veterans and individuals engaged in work in the home), about the requirements and course offerings of the bachelor-degree-granting institution;

(ii) conduct workshops and orientation sessions to ensure that students are familiar with programs, including

laboratories and financial aid programs, at the bachelor-degree-granting institution;

(iii) provide students with research experiences at institutions or work sites[3] participating in the partnership, including stipend support for students participating in summer programs or industry internships; and

(iv) provide faculty mentors for students participating in activities under clause (iii), including summer salary support for faculty mentors.

(2) OUTREACH GRANTS.—The Director shall make grants to associate-degree-granting colleges with outstanding STEM programs to strengthen relationships with secondary schools and, as appropriate, elementary schools, in the community served by the college by improving STEM education and encouraging the interest and aptitude of students at these schools for careers in STEM and advanced-technology fields through such means as developing articulation agreements or dual credit courses with local secondary schools, or other means as the Director determines appropriate, to enable students to satisfy entrance and course requirements at the associate-degree-granting college.

(3) MENTOR TRAINING GRANTS.—The Director shall establish a program to encourage and make grants available to institutions of higher education that award associate degrees to recruit and train individuals from STEM fields to mentor students who are described in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b) in order to assist those students in identifying, qualifying for, and entering higher-paying technical jobs in those fields, including jobs at Federal and academic laboratories.

(d) GRANTS FOR ASSOCIATE DEGREE PROGRAMS IN STEM FIELDS.—

(1) IN-DEMAND WORKFORCE GRANTS.—The Director shall award grants to junior or community colleges to develop or improve associate degree or certificate programs in STEM fields, with respect to the region in which the respective college is located, and an in-demand industry sector or occupation.

(2) APPLICATIONS.—In considering applications for grants under paragraph (1), the Director shall prioritize—

(A) applications that consist of a partnership between the applying junior or community college and individual employers or an employer consortia, or industry or sector partnerships, and may include a university or other organization with demonstrated expertise in academic program development;

(B) applications that demonstrate current and future workforce demand in occupations directly related to the proposed associate degree or certificate program;

(C) applications that include commitments by the partnering employers or employer consortia, or industry or

[3] The amendment to clause (iii) by section 10312(f)(2)(C)(i)(II)(bb)(AA) of Public Law 117–167 to strike "bachelor's-degree- granting institutions" and inserting "institutions or work sites" should not have included the space before the word "granting" but was carried out to reflect the probable intent of Congress.

sector partnerships, to offer apprenticeships, internships, or other applied learning opportunities to students enrolled in the proposed associate degree or certificate program;

(D) applications that include outreach plans and goals for recruiting and enrolling women and other underrepresented populations in STEM fields in the proposed associate degree or certificate program;

(E) applications that describe how the applying junior or community college will support the collection of information and data for purposes of evaluation of the proposed associate degree or certificate program; and

(F) as appropriate, applications that apply the best practices for STEM education and technical skills education through distance learning or in a simulated work environment, as determined by research described in subsection (f); and

(G) applications that incorporate distance learning tools and approaches.

(e) GRANTS FOR STEM DEGREE APPLIED LEARNING OPPORTUNITIES.—

(1) IN GENERAL.—The Director shall award grants to institutions of higher education partnering with private sector employers or private sector employer consortia, or industry or sector partnerships, that commit to offering apprenticeships, internships, research opportunities, or applied learning experiences to enrolled students in identified STEM baccalaureate degree programs.

(2) PURPOSES.—Awards under this subsection may be used—

(A) to develop curricula and programs for apprenticeship, internships, research opportunities, or applied learning experiences; or

(B) to provide matching funds to incentivize partnership and participation by private sector employers and industry.

(3) APPLICATIONS.—In considering applications for grants under paragraph (1), the Director shall prioritize—

(A) applicants that consist of a partnership between—

(i) the applying institution of higher education; and

(ii) individual employers or an employer consortia, or industry or sector partnerships;

(B) applications that demonstrate current and future workforce demand in occupations directly related to the identified STEM fields;

(C) applications that include outreach plans and goals for recruiting and enrolling women and other underrepresented populations in STEM fields;

(D) applications that describe how the institution of higher education will support the collection and information of data for purposes of the evaluation of identified STEM degree programs; and

(E) applications that incorporate distance learning tools and approaches.

(f) GRANTS FOR COMPUTER-BASED AND ONLINE STEM EDUCATION COURSES.—

(1) IN GENERAL.—The Director of the National Science Foundation shall award competitive grants to institutions of higher education or nonprofit organizations to conduct research on student outcomes and determine best practices for STEM education and technical skills education through distance learning or in a simulated work environment.

(2) RESEARCH AREAS.—The research areas eligible for funding under this subsection may include—

(A) post-secondary courses for technical skills development for STEM occupations;

(B) improving high-school level career and technical education in STEM subjects;

(C) encouraging and sustaining interest and achievement levels in STEM subjects among women and other populations historically underrepresented in STEM studies and careers; and

(D) combining computer-based and online STEM education and skills development with traditional mentoring and other mentoring arrangements, apprenticeships, internships, and other applied learning opportunities.

(g) COORDINATION WITH OTHER FEDERAL DEPARTMENTS.—In carrying out this section, the Director shall consult, cooperate, and coordinate, to enhance program effectiveness and to avoid duplication, with the programs and policies of other relevant Federal agencies.

(h) FUNDING.—

(1) FUNDING.—The Director shall allocate out of amounts made available for the Education and Human Resources Directorate—

(A) up to $5,000,000 to carry out the activities under subsection (d) for each of fiscal years 2019 through 2026, subject to the availability of appropriations;

(B) up to $2,500,000 to carry out the activities under subsection (e) for each of fiscal years 2019 through 2026, subject to the availability of appropriations; and

(C) not less than $3,000,000 to carry out the activities under subsection (f) for each of fiscal years 2019 through 2026, subject to the availability of appropriations.

(2) LIMITATION ON FUNDING.—Amounts made available to carry out subsections (d), (e), and (f) shall be derived from amounts appropriated or otherwise made available to the National Science Foundation.(3) LIMITATION ON FUNDING.—To qualify for a grant under this section, an associate-degree-granting college, or consortium thereof, shall provide assurances adequate to the Director that it will not decrease its level of spending of funds from non-Federal sources on advanced scientific and technical education and training programs.

(i) FUNCTIONS OF THE DIRECTOR.—In carrying out this Act, the Director shall—

(1) award grants on a competitive, merit basis;

(2) ensure an equitable geographic distribution of grant awards;

(3) establish and maintain a readily accessible inventory of the programs assisted under this Act; and

(4) designate an officer of the National Science Foundation to serve as a liaison with associate-degree-granting institutions for the purpose of enhancing the role of such institutions in the activities of the Foundation.

(j) DEFINITIONS.—As used in this section—

(1) the term advanced-technology[4] includes technological fields such as advanced manufacturing, agricultural-, biological- and chemical-technologies, energy and environmental technologies, engineering technologies, information technologies, micro and nano-technologies, cybersecurity technologies, geospatial technologies, and new, emerging technology areas;

(2) the term "associate-degree-granting college" means an institution of higher education (as determined under section 101 of the Higher Education Act of 1965) that—

(A) is a nonprofit institution that offers a 2-year associate-degree program or a 2-year certificate program; or

(B) is a proprietary institution that offers a 2-year associate-degree program;

(3) the term "bachelor-degree-granting institution" means an institution of higher education (as determined under section 101 of the Higher Education Act of 1965) that offers a baccalaureate degree program;

(4) the term "eligible partnership" means one or more associate-degree-granting colleges in partnership with one or more other entities;

(5) the term "in-demand industry sector or occupation" has the meaning given the term in section 3 of the Workforce Innovation and Opportunity Act (29 U.S.C. 3102);

(6) the term "junior or community college" has the meaning given the term in section 312 of the Higher Education Act of 1965 (20 U.S.C. 1058);

(7) the term "region" means a labor market area, as that term is defined in section 3 of the Workforce Innovation and Opportunity Act (29 U.S.C. 3102);

(8) the terms "science, technology, engineering, or mathematics" or "STEM" mean science, technology, engineering, and mathematics, including computer science; and

(9) the term skilled technical workforce[5] has the meaning given such term in section 4(b) of the Innovations in Mentoring, Training, and Apprenticeships Act (42 U.S.C. 1862p).

[4] The phrase "advanced-technology" in paragraph (1) probably should be set out in quotation marks.

[5] The phrase ″skilled technical workforce″ in paragraph (9) probably should be set out in quotation marks.

**SEC. 4. ADMINISTRATIVE AMENDMENT.**

Section 3 of the National Science Foundation Act of 1950 (42 U.S.C. 1862) is amended by adding at the end the following new subsection:

"(g) In carrying out subsection (a)(4), the Foundation is authorized to foster and support access by the research and education communities to computer networks which may be used substantially for purposes in addition to research and education in the sciences and engineering, if the additional uses will tend to increase the overall capabilities of the networks to support such research and education activities.".

**SEC. 5. [42 U.S.C. 1862j] AUTHORIZATION OF APPROPRIATIONS.**

There are authorized to be appropriated to the Director for carrying out sections 2 through 4 $150,000,000 for each of fiscal years 2023 through 2027.