



DoD INSTRUCTION 1025.11

DoD SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) EDUCATION PROGRAMS AND ACTIVITIES

Originating Component: Office of the Under Secretary of Defense for Research and Engineering

Effective: August 21, 2020

Releasability: Cleared for public release. Available on the Directives Division Website at <https://www.esd.whs.mil/DD/>.

Incorporates and Cancels: Under Secretary of Defense for Acquisition, Technology, and Logistics Memorandum, "Science, Technology, Mathematics, and Engineering Education Delegation of Authority to Director, Defense Research and Engineering (DD&RE)," October 12, 2010

Approved June 30, 2020 by: Michael D. Griffin, Under Secretary of Defense for Research and Engineering

Purpose: In accordance with the authority in DoD Directive 5134.01 and the July 13, 2018 Deputy Secretary of Defense Memorandum and the direction in the June 25, 2010 Deputy Secretary of Defense Memorandum, this issuance:

- Establishes and implements policy, assigns responsibilities, prescribes procedures for DoD STEM education programs and activities, and encourages STEM engagement throughout the DoD.
- Authorizes coordinating and collecting data on STEM education programs in accordance with Public Law (P.L.) 111-358.
- Establishes the DoD STEM Advisory Council (SAC) and the SAC Working Group (SACWG).

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SECTION 1: GENERAL ISSUANCE INFORMATION

1.1. APPLICABILITY.

This issuance applies to OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the DoD (referred to collectively in this issuance as the “DoD Components”).

1.2. POLICY.

It is DoD policy to:

- a. Identify actions that the DoD may take to improve education and outreach in STEM fields and disciplines necessary to meet the national defense needs in accordance with the Federal STEM Education Strategic Plan.
- b. Establish, conduct, evaluate, and report programs and activities to carry out STEM education and outreach on behalf of the DoD.
- c. Strengthen the DoD’s efforts to recruit and sustain careers in STEM consistent with diversity program goals and objectives aligned with P.L. 111-358, the Federal STEM Education Strategic Plan, and the Department of Defense Diversity and Inclusion Strategic Plan.
- d. Encourage industry, academia, and non-profit organizations to participate in DoD STEM education programs and activities, in accordance with P.L. 111-358.
- e. Collaborate with other federal agencies to coordinate STEM education programs and activities across the Federal Government.

1.3. INFORMATION COLLECTIONS.

- a. The data collection to monitor and assess DoD STEM education programs and activities, referred to in Paragraphs 2.2.g and 2.4.c, does not require licensing with a report control symbol in accordance with Paragraph 1.b(16) of Enclosure 3 of Volume 1 of DoD Manual (DoDM) 8910.01.
- b. The budget proposals referred to in Paragraph 4.4.d(2) do not require licensing with a report control symbol in accordance with Paragraph 1.b(10) of Enclosure 3 of Volume 1 of DoDM 8910.01.
- c. The program evaluations and assessments, referred to in Paragraphs 3.2.a and 3.2.b, will be cleared on an ad hoc basis via generic fast-track clearance under Office of Management and Budget control number 0704-0553, in accordance with the procedures in Volume 2 of DoDM

8910.01. The expiration date of this information collection can be found on the Office of Information and Regulatory Affairs (OIRA) website at <https://www.reginfo.gov/public/do/PRASearch>.

SECTION 2: RESPONSIBILITIES

2.1. UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING (USD(R&E)).

The USD(R&E) establishes policy for the STEM education programs and activities in accordance with the direction in the June 25, 2010 Deputy Secretary of Defense Memorandum.

2.2. DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING FOR RESEARCH AND TECHNOLOGY (DDRE(R&T)).

Under the authority, direction, and control of the USD(R&E), the DDRE(R&T):

- a. Develops and implements policy, provides guidance, and makes recommendations to carry out programs and activities in STEM fields and disciplines necessary to meet the national defense needs.
- b. Supervises the Laboratories and Personnel Office (L&PO), which is responsible for providing guidance and oversight to the DoD for STEM education programs and activities.
- c. Coordinates STEM education programs and activities with the DoD Component heads.
- d. Monitors compliance with this issuance.
- e. Identifies actions the DoD may take to improve STEM education in consultation with the Department of Education, the Smithsonian Institution, and the National Science Foundation, in accordance with P.L. 111-358.
- f. Coordinates with the Under Secretary of Defense (Comptroller)/Chief Financial Officer, Department of Defense and the DoD Component heads, as required, to provide budget recommendations and input for DoD STEM education programs and activities.
- g. Develops policies, provides advice, and represents the DoD on STEM matters involving interagency partners.
- h. Establishes data and analysis requirements, collects data, and conducts analysis to monitor and assess DoD STEM programs and activities.
- i. Conducts STEM education programs and activities pursuant to Sections 2191-2197 of Title 10, United States Code (U.S.C.).
- j. Provides additional guidance and develops systems and standards to accommodate operational requirements and achieve designated performance outcomes.

2.3. UNDER SECRETARY OF DEFENSE FOR PERSONNEL AND READINESS.

The Under Secretary of Defense for Personnel and Readiness:

- a. Establishes policies and procedures to support DoD STEM and investments, including tracking and keeping data on trends in military and civilian workforce requirements, recruitment, retention, education, gaps, long-term goals, and hiring.
- b. Supports the DDRE(R&T) by providing STEM workforce data for military and civilian personnel.

2.4. DOD COMPONENT HEADS.

The DoD Component heads:

- a. Provide executive level (two-star general officer, flag officer, or civilian equivalent) representatives for the DoD SAC, as necessary.
- b. Establish new, and continue current, programs and activities to stimulate and support interest in:
 - (1) STEM fields, in accordance with Sections 2191-2197 of Title 10, U.S.C.
 - (2) DoD careers within STEM disciplines and fields to meet defense and national security needs.
- c. Collect data and report the results to the DDRE(R&T) about efforts supporting STEM education programs and activities as laid out in this issuance, in accordance with P.L. 111-358 and DoD Instruction 8910.01.
- d. Appoint a SACWG member to oversee STEM education programs and activities in accordance with Paragraph 4.4. This individual will ensure that his or her Component:
 - (1) Efficiently administers and executes STEM investments.
 - (2) Supports DoD policies and standards for administrative and financial management, review, and evaluation of STEM education programs and activities.
- e. Comply with regulations and policies regarding volunteers and voluntary services pursuant to DoD Instruction 1100.21 and direction in the April 23, 1998 Office of Personnel Management Memorandum.
- f. Disburse funding and ensure appropriate accounting principles are practiced in accordance with Volume 5 of DoD 7000.14-R.
- g. Require that Component-level activities carry out or support the procedures in Paragraph 3.2.

SECTION 3: PROCEDURES

3.1. L&PO ACTIVITIES.

The L&PO, in coordination with the DoD Components, will:

a. Work with and support National Defense Science and Engineering Graduate Fellowships to expand STEM capabilities in support of the national defense, pursuant to Section 2191 of Title 10, U.S.C.

b. Identify actions that the DoD may take to improve all levels of education in STEM skills. Establish and conduct programs to carry out such actions, including internships and apprenticeship programs, pursuant to Section 2192 of Title 10, U.S.C.

c. Award grants to students who have been accepted for enrollment in, or who are enrolled in, an institution of higher education as undergraduate and graduate students in scientific and engineering disciplines critical to the DoD's national security functions, pursuant to Section 2193 of Title 10, U.S.C.

d. Establish programs to improve science and mathematics knowledge and skills of elementary and secondary school students and faculty members, pursuant to Section 2193a of Title 10, U.S.C.

e. Work with and support the DoD STARBASE Program to improve knowledge and skills in primary and secondary schooling in science, mathematics, and technology education at the discretion of the Secretary of Defense, in coordination with the Secretaries of the Military Departments, pursuant to Section 2193b of Title 10, U.S.C.

f. Authorize the director of each defense laboratory to enter into one or more education partnership agreements with local educational institutions in the United States, to encourage and enhance study in scientific disciplines at all levels of education, pursuant to Section 2194 of Title 10, U.S.C.

g. Support establishing cooperative work-education programs for undergraduate and graduate students as desired by the director of each defense laboratory, in association with one or more public or private colleges or universities in the United States or one or more consortia of colleges in the United States, pursuant to Section 2195 of Title 10, U.S.C.

h. Establish a program to make grants to institutions of higher education, or to consortiums of such institutions, to establish new programs (or improve existing programs) in manufacturing engineering education, in consultation with the Secretary of Education, the Director of the National Science Foundation, and the Director of the Office of Science Technology and Policy; pursuant to Section 2196 of Title 10, U.S.C.

i. Conduct a merit competition program, in consultation with the Secretary of Education and the Secretary of Commerce, to support the activities of one or more manufacturing experts at institutions of higher education, pursuant to Section 2197 of Title 10, U.S.C.

j. Prepare an annual written report for the Chair, DoD SAC, on progress towards the DoD STEM strategic plan goals.

k. Disburse funding and ensure appropriate accounting principles are practiced in accordance with Volume 5 of DoD 7000.14-R.

3.2. PROGRAM EVALUATIONS.

Program evaluations will answer specific questions about program performance and focus on assessing program operations and results. Program evaluation results may be used to assess a program's effectiveness, identify how to improve performance, or guide resource allocation, pursuant to U.S. Government Accountability Office Report (GAO) GAO-12-208G.

a. The DDRE(R&T) will coordinate program evaluations to best meet the goals and objectives of the DoD's STEM education programs and activities.

b. The DDRE(R&T), in conjunction with the DoD Components, will determine the appropriate type of evaluation for answering varied questions about program performance and will design program evaluations to ensure overall study quality by:

- (1) Clarifying the program's goals and strategy.
- (2) Developing relevant and useful evaluation questions and measures.
- (3) Selecting an appropriate evaluation approach or design for each evaluation question and measure.
- (4) Identifying data sources and collection procedures to obtain relevant, credible information.
- (5) Developing plans to analyze this data in ways that allow valid conclusions to be drawn from the evaluation questions and measures.

SECTION 4: DoD SAC

4.1. DOD SAC FUNCTIONS.

The DoD SAC will:

- a. Coordinate DoD policy recommendations related to STEM education programs and activities and serve as the primary focal point between the SACWG and the OSD.
- b. Oversee and manage the membership of the SACWG.
- c. Advise SACWG representatives on the DoD's STEM efforts and resources in their areas of responsibility to support DoD STEM goals and objectives.

4.2. DOD SAC MEMBERSHIP.

The DoD SAC will consist of:

- a. The DDRE(R&T), who serves as the Chair.
- b. Representatives from DoD Components that participate in DoD STEM education programs and activities.

4.3. SACWG FUNCTIONS.

The SACWG, through the DoD SAC, will:

- a. Oversee STEM education programs and activities pursuant to this issuance.
- b. In conjunction with the DDRE(R&T), approve a DoD STEM strategic plan. The strategic plan will cover a period of at least 3 years following the fiscal year in which the plan is approved.
- c. Share progress towards goals to support federal STEM initiatives with DoD leadership.
- d. In conjunction with the DDRE(R&T), make recommendations on an annual report pertaining to the DoD STEM strategic plan goals.
- e. Advise the DoD Components on the DoD's STEM efforts and resources in their areas of responsibility.

4.4. SACWG REPRESENTATIVES.

Each DoD Component's SACWG representative:

- a. Coordinates the Component-level STEM activities.
- b. Supports the Component's DoD SAC representative.
- c. Serves as a single point of contact for STEM activities within his or her Component.
- d. Provides budget requirements and funding execution for National Defense Education Program resourcing.
 - (1) Communicates funding requirements to the DDRE(R&T).
 - (2) Solicits and prioritizes STEM budget proposals from the Components.
 - (3) Distributes funding to elements within their Component and ensures appropriate accounting principles are practiced.
- e. Conducts and reports on program assessments and evaluations pursuant to this issuance.
- f. Recommends improvements and efficiencies to the DDRE(R&T) with respect to administering and executing STEM education programs and activities pursuant to P.L. 111-358

GLOSSARY

G.1. ACRONYMS.

ACRONYM	MEANING
DDRE(R&T)	Director of Defense Research and Engineering for Research and Technology
DoDM	DoD manual
L&PO	Laboratories and Personnel Office
P.L.	Public Law
SAC	STEM Advisory Council
SACWG	STEM Advisory Council Working Group
STEM	science, technology, engineering, and mathematics
U.S.C.	United States Code
USD(R&E)	Under Secretary of Defense for Research and Engineering

G.2. DEFINITIONS.

Unless otherwise noted, these terms and their definitions are for the purpose of this issuance.

TERM	DEFINITION
apprenticeship program	A combination of on-the-job training and related instruction in which a person learns the practical and theoretical aspects of a highly skilled occupation.
defense laboratory	Defined in Section 2199 of Title 10, U.S.C.
DoD STEM	All forms of education, training, and outreach about the natural, physical, mathematical, and social environments and the use and transfer of tools, technologies, processes, and mechanisms to better preserve national security and support the mission of U.S. warfighters.
DoD SAC	A group of executive representatives from the DoD Components. The DoD SAC serves as the principal DoD forum advising the DDRE(R&T) on matters pertaining to the DoD STEM strategy. It provides recommendations and guidance and will assist in

TERM	DEFINITION
	coordinating STEM initiatives and activities across the DoD in accordance with applicable authorities and statutes
educational institutions	Educational agencies, colleges, universities and any other nonprofit institutions that are dedicated to improving science, technology, mathematics, and engineering education.
education partnership agreement	Any agreement between one or more federal laboratories and one or more non-federal parties under which the government, through its laboratories, provides personnel, services, facilities, equipment, intellectual property, or other resources with or without reimbursement (but not funds to non-federal parties); and the non-federal parties provide funds, personnel, services, facilities, equipment, intellectual property, or other resources toward the conduct of specified research or development efforts that are consistent with the missions of the laboratory.
internship	An official or formal program that provides practical experience (paid or unpaid) in an occupation or profession to a student at the secondary through post graduate level for a specified period of time at a location within the Defense enterprise.
program evaluation	A systematic study using research methods to collect and analyze data to assess program operations and outcomes. Program evaluation results may be used to assess a program's effectiveness, identify how to improve performance, or guide resource allocation.
SACWG	A working group consisting of representatives from the DoD Components that identifies funding goals and priorities, selects high quality proposals, distributes funds, assesses the progress of activities, gathers and consolidates Component program data, and ensures Components comply with DoD program management, assessment, and evaluation policy.

TERM

DEFINITION

STEM education programs and activities

Formal or informal education that is primarily focused on physical and natural sciences, technology, engineering, social sciences, and mathematics disciplines, topics, or issues (including environmental science education or stewardship). STEM education includes one or more of the following as the primary objective:

Develop learners' knowledge, skill, or interest in STEM.

Attract students to pursue certifications, licenses, or degrees (two-year degrees through post-doctoral degrees) or careers in STEM fields.

Provide growth and research opportunities for post-secondary, college and graduate students in STEM fields, such as working with researchers or conducting research that is primarily intended to further education.

Improve mentor/educator (K-12 pre-service or in-service, post-secondary, and informal) quality in STEM areas.

Improve or expand the capacity of institutions to promote or foster STEM fields.

Support research on effective STEM teaching and learning practices.

outreach

Efforts designed to build awareness, develop relationships, and promote education products and services that support formal or classroom-based education, as well as informal education that occurs outside the classroom including the providing of services to people who might not otherwise have access to those services.

REFERENCES

- Committee on STEM Education of the National Science and Technology Council, “Chartering a Course for Success: America’s Strategy for STEM Education,” December 2018
- Deputy Secretary of Defense Memorandum, “Delegation of Authority Relating to Support of Science, Technology, Mathematics and Engineering Education,” June 25, 2010
- Deputy Secretary of Defense Memorandum, “Establishment of the Office of the Under Secretary of Defense for Research and Engineering and the Office of the Under Secretary of Defense for Acquisition and Sustainment,” July 13, 2018
- DoD 7000.14-R, Volume 5, “Financial Management Regulation: Disbursing Policy,” current edition
- DoD Directive 5134.01, “Under Secretary of Defense for Acquisition, Technology, and Logistics (USD (AT&L)),” December 9, 2005, as amended
- DoD Diversity and Inclusion Strategic Plan, 2012-2017
- DoD Instruction 1100.21, “Voluntary Services in the Department of Defense,” March 27, 2019
- DoD Instruction 8910.01, “Information Collection and Reporting,” May 19, 2014
- DoD Manual 8910.01, Volume 1, “DoD Information Collections Manual: Procedures for DoD Internal Information Collections,” June 30, 2014, as amended
- DoD Manual 8910.01, Volume 2, “DoD Information Collections Manual: Procedures for DoD Public Information Collections,” June 30, 2014, as amended
- Office of Personnel Management Memorandum, “Participation of Federal Employees in Volunteer Activities,” April 23, 1998
- Public Law 111-352, “The GPRA Modernization Act of 2010,” January 4, 2011
- Public Law 111-358, “America COMPETES Reauthorization Act of 2010,” January 4, 2011
- U.S. Government Accountability Office, GAO-12-208G, “Designing Evaluations,” January 31, 2012¹
- United States Code, Title 10

¹ Available online via <https://www.gao.gov/products/GAO-12-208G>.