



An Overview of the NSF and NSF Programs that Support Innovation in STEM Education and Workforce Development - A Specific Focus on the ATE Program



Presentation Outline



- About the National Science Foundation (NSF) as a federal agency
- Navigating a Portion of the NSF website
- NSF Programs that Support Undergraduate Education
- A Look at the NSF Advanced Technological Education (ATE) Program
- A Teaser on Preparing NSF Proposals – Resources to Start to Explore
- Q & A



Presentation Ground Rules



There are no ground rules; stop me *anytime* I'll be happy to clarify, correct or expand upon a topic.



Acknowledgment and Disclaimer



This material is based upon work supported by the National Science Foundation under Grant No. DUE 2018198. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

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Capacity-Building Efforts and Legacy

Give a person a fish and feed them for a day.

Teach a person to fish and feed them for a lifetime.



https://commons.wikimedia.org/wiki/File:Boy_fishing.jpg

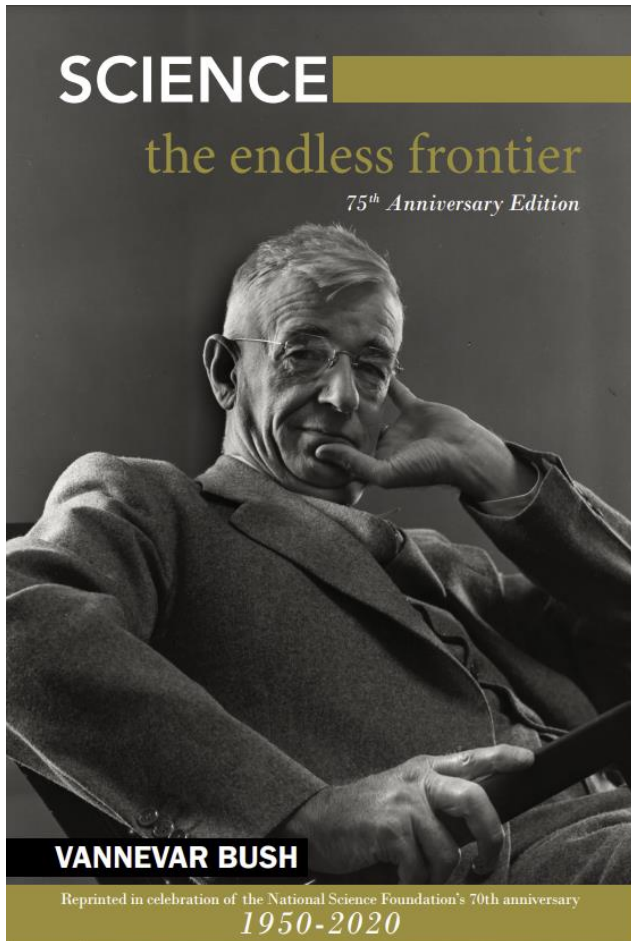
This work is supported by National Science Foundation Grant No. DUE 1826514.



About the National Science Foundation (NSF)



Vannevar Bush 1890-1974



- MIT Professor of Electrical Engineering.
- Contributed to development of radar and Manhattan Project.
- Germans invaded France in May of 1940.
- Took a one-pager to FDR in June of 1940 to establish National Defense Research Committee to coordinate civilian and military research - FDR approved the proposal in 15 minutes.
- In 1941, FDR established the Office of Scientific Research & Development (OSRD) with Bush as Director.
- In July 1945, Bush delivered the report *Science - The Endless Frontier* to President Truman promoting the importance of federal peacetime basic scientific research and linking it to national security and economic health.
- Post-WWII, OSRD got messy and was dissolved, but the Bush legacy continued. Congress passed the National Science Foundation Act of 1950 to establish NSF "to promote the progress of science; to advance the national health, prosperity and welfare; to secure the national defense; and for other purposes."



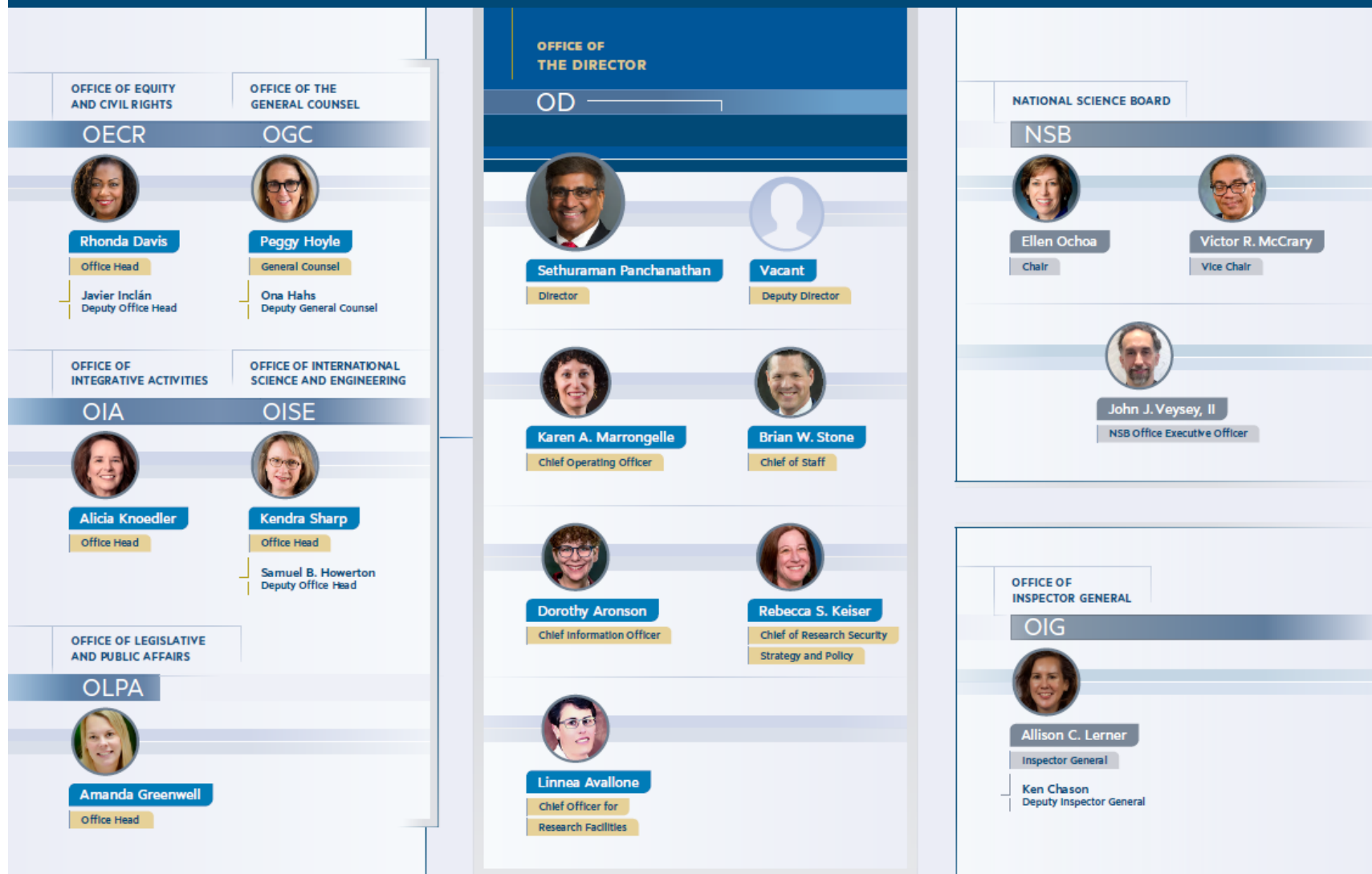
NSF by the Numbers



- Fiscal Year 2021 (FY21) budget was \$8.5 Billion, and 94% goes out the door in the form of grants and awards.
- \$1.4 Billion was allocated to STEM education and workforce development.
- NSF supports 24% of all basic research conducted by US academic institutions. In fields like mathematics computer science and the social sciences, NSF is the major source of federal support.
- In 2020, NSF received approximately 43,000 proposals and funded about 12,000 of them.



NSF ORGANIZATIONAL CHART




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Proposed 8th NSF Directorate – TIP



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Connecting with Two-Year Institutions on a Proposed New NSF Directorate

March 3, 2022 1:30 PM to
March 3, 2022 3:30 PM
Virtual

[Save the Date](#)

The National Science Foundation (NSF) invites administrators and faculty from Two-Year Institutions to participate in a discussion about the concept of a new NSF Directorate for Technology, Innovation and Partnerships (TIP) that was included in the [fiscal year \(FY\) 2022 President's Budget Request for NSF](#). This discussion will be held virtually on **March 3, 2022, from 1:30 – 3:30 p.m. ET.**

A key goal for the proposed TIP directorate is to serve the societal and economic needs of every part of the U.S. To this end, NSF believes contributions from diverse organization types, including Two-Year Institutions, are vital to realizing the mission of the proposed directorate and its potential new programs.

Meeting Details:

At this two-hour event, NSF will share information about the [President's Budget Request for TIP](#) including the proposed Regional Innovation Accelerators (RIA) program, and participants will be invited to join small-group discussions about the benefits, opportunities, and challenges that TIP and RIAs present for their institutions and the communities they serve. We will also discuss ways to foster deep, meaningful, and beneficial partnerships between academic institutions and other private and public stakeholders; support use-inspired research and development; nurture an inclusive culture of innovation; create sustainable innovation ecosystems; and grow the future science and engineering workforce.

We are excited to meet with you and hope you will be able to join us.

https://nsf.gov/events/event_summ.jsp?cntn_id=304451&org=NSF

This work is supported by National Science Foundation Grant No. DUE 1826514.



NSF Home Page – nsf.gov



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Research Areas

Funding

Awards

Document Library

News

About NSF



Advancing the Sciences

Funding & Supporting

Inspiring & Educating

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Navigate to EHR Home Page



The screenshot shows the NSF website's navigation menu. The 'Research Areas' tab is selected, and a dropdown menu is open. The 'Education and Human Resources (EHR)' option is highlighted with a red box. Other research areas listed include Biological Sciences (BIO), Computer and Information Science and Engineering (CISE), Engineering (ENG), Environmental Research and Education (ERE), Geosciences (GEO), Integrative Activities (OIA), International Science and Engineering (OISE), Mathematical and Physical Sciences (MPS), and Social, Behavioral and Economic Sciences (SBE). The 'RELATED LINKS' section includes Interdisciplinary Research, NSF Organization List, Responsible and Ethical Conduct of Research, Staff Directory, and Understanding NSF Research. The main content area features a 'SCIENCE MATTERS' banner with the headline 'Studying long-term changes to ecosystems' and a 'FULL STORY' button. Below the banner is a section titled 'Inspiring & Educating' with the text 'WARD MECHANISMS' and 'EDUCATION PROGRAMS'.

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Search

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Home > Research Areas

Email Print Share

Education and Human Resources (EHR)

Education and Human Resources (EHR) Home

- About
- Programs
- Staff
- Funding
- Awards
- News
- Events
- Additional Resources
- Graduate Education (DGE) >
- Research on Learning in Formal and Informal Settings (DRL) >
- Undergraduate Education (DUE) >**
- Human Resource Development (HRD) >

Education and Human Resources (EHR)

EHR supports excellence in U.S. STEM education at all levels, in all settings for the development of a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians and educators and a well-informed citizenry.

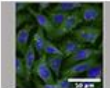

[Read More](#)

Announcements

- EHR/DUE Announces New Division Director [Read More](#) >
- DCL: Dear Colleague Letter: Persons with Disabilities – STEM Engagement and Access [Read More](#) >
- DCL: Research to Improve STEM Teaching, Learning, and Workforce Development for Persons with Disabilities [Read More](#) >

[See All](#) >

News

-  Researchers develop test to confirm nanoparticle payload delivery
FEBRUARY 2, 2022
- White House Office of Science & Technology Policy and U.S. National Science Foundation
FEBRUARY 1, 2022
-  Scientists fabricate material that can sense and adapt to the environment
DECEMBER 1, 2021

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DUE Home Page



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Contact | Help

Search

NSB Research Areas Funding Awards Document Library News About NSF

Home > Research Areas > Education and Human Resources

Email Print Share

Education and Human Resources (EHR)

- Education and Human Resources (EHR) Home >
- Graduate Education (DGE) >
- Research on Learning in Formal and Informal Settings (DRL) >
- Undergraduate Education (DUE) ▾
- About
- Programs**
- Staff
- Funding
- Awards
- News
- Events
- Additional Resources

Undergraduate Education (DUE)




DUE's programs are intended to strengthen STEM education at two- and four-year colleges and universities by improving curricula, instruction, laboratories, infrastructure, assessment, diversity of students and faculty, and collaborations.

[Read More](#)

Announcements

- See the DU(E-NEWS) page for community updates [Read More](#) >
- NEW IUUSE: EHR Solicitation Published [Read More](#) >
- New S-STEM Solicitation Released [Read More](#) >

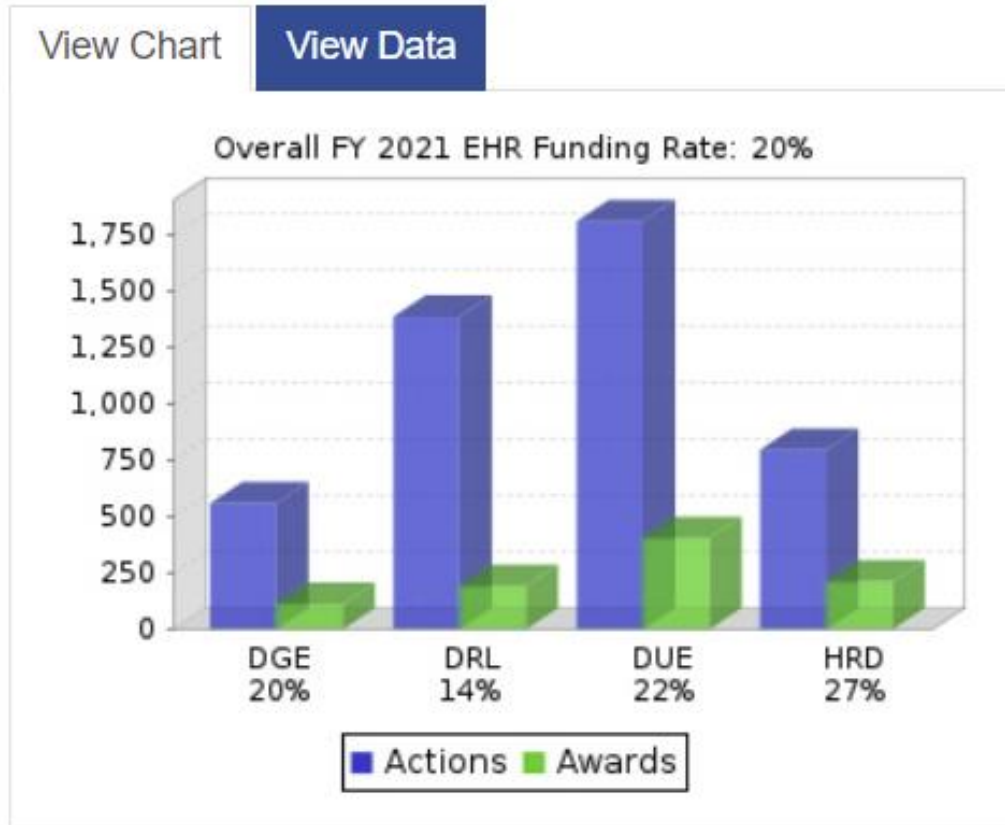
News

-  College using 3D printers to make face shields for regional hospital
APRIL 8, 2020
-  Statement on executive order to maintain American leadership in artificial intelligence
FEBRUARY 11, 2019
-  NSF announces new measures to protect

This work is supported by National Science Foundation Grant No. DUE 1826514.



EHR Funding Rates



View Chart View Data

Overall FY 2021 EHR funding rate: 20%

Division	Funding Rate	Actions	Awards
DGE	20%	559	113
DRL	14%	1387	192
DUE	22%	1810	405
HRD	27%	796	212

<https://www.nsf.gov/funding/funding-rates.jsp?org=EHR>



Programs that Support Undergraduate Education



Programs: Division of Undergraduate Education (DUE)

This is a list of all the programs within the Division of Undergraduate Education (DUE).

Key: **C** Crosscutting | **N** NSF-wide

▼ DUE Current Programs

- Advanced Technological Education (ATE) ★★★★★
- Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)
- NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)
- Robert Noyce Teacher Scholarship Program

▼ Additional Funding Opportunities for the DUE Community

- IUSE / Professional Formation of Engineers: Revolutionizing Engineering Departments (IUSE/PFE: RED)
- Pathways into the Earth, Ocean, Polar and Atmospheric & Geospace Sciences (GEOPATHs)

▼ Programs with Active Awards, but No Longer Receiving New Proposals

- National STEM Education Distributed Learning (NSDL)
- Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP)
- Widening Implementation & Demonstration of Evidence-Based Reforms (WIDER)

▼ Accelerating Discovery: Educating the Future STEM Workforce (AD)

▼ Advancing Innovation and Impact in Undergraduate STEM Education at Two-year Institutions of Higher Education

▼ EHR Core Research (ECR:Core)

▼ EHR Core Research - Resource Coordination Hub (ECR Hub)

▼ EHR Core Research - Resource Coordination Hub (ECR Hub)

▼ EHR Core Research: Building Capacity in STEM Education Research (ECR: BCSER)

▼ Facilitator of Polar STEAM (Polar STEAM)

▼ Improving Undergraduate STEM Education: Computing in Undergraduate Education (IUSE: CUE)

▼ Improving Undergraduate STEM Education: Hispanic-Serving Institutions (HSI Program)

▼ Mid-Career Advancement (MCA) **C**

▼ NSF-NIST Interaction in Basic and Applied Scientific Research **C**

▼ Racial Equity in STEM Education (EHR Racial Equity)

▼ Research Coordination Networks in Undergraduate Biology Education (RCN-UBE)

▼ Scholarships in STEM Network (S-STEM-Net)

▼ Science, Technology, Engineering and Mathematics (STEM) Education Postdoctoral Research Fellowships (STEM Ed PRF)

▼ Vision and Change in Undergraduate Biology Education (V&C)

While multiple NSF programs may be of value to your STEM innovations, the focal point of Project Vision support is on proposals to be submitted to the ATE program. ★★★★★



Programs that Support Undergraduate Education



Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)

IUSE: EHR supports projects that seek to bring recent advances in STEM knowledge into undergraduate education, that adapt, improve, and incorporate evidence-based practices into STEM teaching and learning, and that lay the groundwork for institutional improvement in STEM education.

In addition to innovative work at the frontier of STEM education, this program also encourages replication of research studies at different types of institutions and with different student bodies to produce deeper knowledge about the effectiveness and transferability of findings.

<https://beta.nsf.gov/funding/opportunities/improving-undergraduate-stem-education-education-and-human-resources-iuse-ehr>



Programs that Support Undergraduate Education



Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)

Track	Level	Deadlines
Engaged Student Learning	Level 1: up to \$300,000 for up to three years	July 21, 2021 January 19, 2022 3 rd Wednesday in January and July thereafter
	Level 2: \$300,001 - \$600,000 for up to three years	July 21, 2021 3 rd Wednesday in July thereafter
	Level 3: \$600,001 - \$2 million for up to five years	July 21, 2021 3 rd Wednesday in July thereafter
Institutional and Community Transformation	Capacity-Building: \$150K (single institution) or \$300K (multiple institutions) for up to two years	July 21, 2021 January 19, 2022 3 rd Wednesday in January and July thereafter
	Level 1: up to \$300,000 for up to three years	July 21, 2021 January 19, 2022 3 rd Wednesday in January and July thereafter
	Level 2: \$300,001 - \$2 million (single institution) or \$3 million (multiple institutions and research centers) for up to five years	July 21, 2021 3 rd Wednesday in July thereafter

This work is supported by National Science Foundation Grant No. DUE 1826514.



Programs that Support Undergraduate Education



NSF Scholarships in Science, Technology, Engineering, and Mathematics Program (S-STEM)

The main goal of the S-STEM program is to enable low-income students with academic ability, talent or potential to pursue successful careers in promising STEM fields.

Ultimately, the S-STEM program seeks to increase the number of low-income students who graduate with a S-STEM eligible degree and contribute to the American innovation economy with their STEM knowledge.

Recognizing that financial aid alone cannot increase retention and graduation in STEM, the program provides awards to institutions of higher education (IHEs) not only to fund scholarships, but also to adapt, implement, and study evidence-based curricular and co-curricular activities that have been shown to be effective supporting recruitment, retention, transfer (if appropriate), student success, academic/career pathways, and graduation in STEM.

<https://beta.nsf.gov/funding/opportunities/nsf-scholarships-science-technology-engineering-and-mathematics-program-s>



Programs that Support Undergraduate Education



NSF Scholarships in Science, Technology, Engineering, and Mathematics Program (S-STEM)

Track 1 (Institutional Capacity Building) – budget requests up to \$750,000 for up to 6 years.

Track 1 projects seek to increase the participation of institutions that have never had an award from the S-STEM program or the STEM Talent Expansion (STEP) program. This requirement applies to the institution as a whole. One S-STEM or STEP award to any department or school within the institution makes the entire institution ineligible for a Track 1 award.

Track 2 (Implementation: Single Institution) – budget requests up to \$1,500,000 for up to 6 years.

Track 2 proposals have the same S-STEM goals as Track 1 proposals. They generally involve and benefit only one institution, but they will serve more scholars than Track 1 proposals. Any IHE (as described under the eligibility section) can submit a Track 2 proposal, whether or not the institution has received prior S-STEM or STEP awards.

Track 3 (Inter-institutional Consortia) – budget requests up to \$5,000,000 for up to 6 years.

Track 3 projects support multi-institutional collaborations that focus on a common interest or challenge.



Programs that Support Undergraduate Education



Robert Noyce Teacher Scholarship Program (Noyce)

Noyce supports talented science, technology, engineering, and mathematics (STEM) undergraduate majors and professionals to become effective K-12 STEM teachers. It also supports experienced, exemplary K-12 STEM teachers to become teacher leaders in high-need school districts.

<https://beta.nsf.gov/funding/opportunities/robert-noyce-teacher-scholarship-program>



Programs that Support Undergraduate Education



Robert Noyce Teacher Scholarship Program (Noyce)

	Intended Outcome	Eligible Pre-Service or In-Service Teachers	Length of Required Teaching Commitment
Track 1: Scholarships and Stipends (S&S) up to \$1,200,000 with a duration of up to 5 years	Develop K-12 STEM teachers in high-need school districts	Noyce-eligible STEM undergraduate majors & STEM professionals	2 years/year of support
Track 2: Teaching Fellowships (TF) up to \$3,000,000, with a duration of up to 6 years		Noyce-eligible STEM professionals	4 years
Track 3: Master Teaching Fellowships (MTF) up to \$3,000,000, with a duration of up to 6 years	Develop K-12 STEM teacher leaders in high- need school districts	K-12 STEM teachers with a bachelor's degree or master's degree in their field	5 years
Track 4: Noyce Research up to \$1,000,000, with a duration of up to 5 years	Research effectiveness and retention of K-12 STEM teachers in high-need school districts	N/A	N/A
Capacity Building up to \$75,000, with a duration of up to 1 year	N/A	N/A	N/A

*Awards may exceed the budget maximums through Collaboration Incentives for engagement of community colleges in Capacity Building or Track 1 projects, engagement with Noyce awards in Track 4 projects, or engagement with minority-serving institutions in any Noyce submission. See Section III: Award Information for additional details.

This work is supported by National Science Foundation Grant No. DUE 1826514.



ATE Program Solicitation – NSF 21-598



Advanced Technological Education (ATE)

PROGRAM SOLICITATION
NSF 21-598

REPLACES DOCUMENT(S):
NSF 18-571



National Science Foundation
Directorate for Education and Human Resources
Division of Undergraduate Education

Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):

October 14, 2021

October 08, 2022

October 05, 2023

IMPORTANT INFORMATION AND REVISION NOTES

Track 1: Small Projects for Institutions New to the ATE program has a maximum budget of \$350,000 over three years.

Track 2: ATE Projects has a maximum budget of \$650,000 over three years.

ATE-Coordination Network projects are no longer supported.

A new track, Track 3, entitled "Consortia for Innovations in Technician Education" has been added.

Track 5: Targeted Research on Technician Education has been renamed Applied Research on Technician Education, and additional information has been added.

Developers are strongly encouraged to use an open licensing approach for any new learning materials and computer software source code when these materials are developed as a component of the proposed project (see text under "Reporting Requirements").

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 22-1), which is effective for proposals submitted, or due, on or after October 4, 2021.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Advanced Technological Education (ATE)

Synopsis of Program:

With a focus on two-year Institutions of Higher Education (IHEs), the Advanced Technological Education (ATE) program supports the education of technicians for the high-technology fields that drive our nation's economy. The program involves partnerships between academic institutions (grades 7-12, IHEs), industry, and economic development agencies to promote improvement in the education of science and engineering technicians at the undergraduate and secondary institution school levels. The ATE program supports curriculum development; professional development of college faculty and secondary school teachers; career pathways; and other activities. The program invites applied research proposals that advance the knowledge base related to technician education. It is required that projects be faculty driven and that courses and programs are credit bearing, although materials developed may also be used for incumbent worker education.

The ATE program encourages partnerships with other entities that may impact technician education. For example, with

- the National Institute of Standards and Technology (NIST) Manufacturing Extension Partnerships (MEPs) (<http://www.nist.gov/mep/index.cfm>) as applicable to support technician education programs and the industries they serve;
- Manufacturing USA Institutes (<https://manufacturing.gov/>) addressing workforce development issues (also see DCL NSF 18-007);

TABLE OF CONTENTS

Summary of Program Requirements

- I. Introduction
- II. Program Description
- III. Award Information
- IV. Eligibility Information
- V. Proposal Preparation and Submission Instructions
 - A. Proposal Preparation Instructions
 - B. Budgetary Information
 - C. Due Dates
 - D. FastLane/Grants.gov Requirements
- VI. NSF Proposal Processing and Review Procedures
 - A. Merit Review Principles and Criteria
 - B. Review and Selection Process
- VII. Award Administration Information
 - A. Notification of the Award
 - B. Award Conditions
 - C. Reporting Requirements
- VIII. Agency Contacts
- IX. Other Information



ATE Program Synopsis (from solicitation)



Synopsis of Program:

With a focus on two-year Institutions of Higher Education (IHEs), the Advanced Technological Education (ATE) program supports the education of technicians for the high-technology fields that drive our nation's economy. The program involves partnerships between academic institutions (grades 7-12, IHEs), industry, and economic development agencies to promote improvement in the education of science and engineering technicians at the undergraduate and secondary institution school levels. The ATE program supports curriculum development; professional development of college faculty and secondary school teachers; career pathways; and other activities. The program invites applied research proposals that advance the knowledge base related to technician education. It is required that projects be faculty driven and that courses and programs are credit bearing, although materials developed may also be used for incumbent worker education.



ATE Program Parameters

Four Program Tracks



Track 1: *Small Projects for Institutions New to ATE*

(Budget request may be up to \$350,000, typically spread over a 3-year project.)

This track seeks to increase the incentives and opportunities for community colleges that have little or no previous experience with the ATE program to undertake projects to improve the education of the skilled technical workforce. This track is designed to stimulate implementation, adaptation, and innovation in all areas supported by the ATE program and to broaden the base of community colleges participating in the program. Proposers are strongly encouraged to utilize resources developed by other ATE or NSF awardees and to consult with people from those projects and centers.

Only community college campuses that have not had an ATE award within the past 7 years may be the "performing organization" on a proposal in this track.



ATE Program Parameters



Four Program Tracks

Track 2: ATE Projects (Budget request may be up to \$650,000 for up to 3 years of project.)

This track supports a diversity of project areas focused on improving the education of the skilled technical workforce, and these projects are usually larger in scope than those proposed under Track 1.

Types of projects include:

Program Development and Improvement: These projects should increase the relevance of technician education to modern practices and assure an increased number of students with an enhanced STEM theoretical understanding and technical skills and competencies entering the high performance workplace. Proposed activities should produce a coherent sequence of classes, laboratories, and work-based educational experiences that revitalize the learning environment, course content and technical experiences for students preparing to be science and engineering technicians. **Employers must be committed partners**, and the resulting program should constitute a model that could be disseminated broadly.



ATE Program Parameters



Four Program Tracks

Track 2: ATE Projects (cont.)

Curriculum and Educational Materials Development: A project may also focus on curriculum and materials development with the intent of broadly disseminating the developed products. Proposed project activities should affect the learning environment, course content, and experience of instruction for students preparing to be science and engineering technicians and for their faculty. Projects may develop new print, electronic, and multimedia materials, including simulations, scenarios, and web-based collections as well as laboratory experiments and manuals. It is expected that products will be developed with input from business, industry, and government, validated by experts from these organizations, field tested in diverse locations, and validated in terms of their effectiveness in meeting learning goals.



ATE Program Parameters

Four Program Tracks



Track 2: ATE Projects (cont.)

Professional Development for Educators: ATE supports projects that provide current secondary school teachers and IHE faculty with opportunities for continued professional growth in areas that directly impact technician education. These projects should be designed to enhance the educators' disciplinary capabilities, teaching skills, understanding of current technologies, practices, and employability skills. Activities typically include workshops/meetings, intensive seminars, industry internships, or a combination of these. Such activities typically last from a few days to several weeks and are usually conducted in the summer, with follow-on activities conducted during the academic year. To effect long-term change, workshop/meeting participants should demonstrate institutional support. The program particularly encourages activities that involve secondary school teachers and two-year IHE faculty working together.



ATE Program Parameters

Four Program Tracks



Track 2: ATE Projects (cont.)

Leadership Capacity Building for Faculty: The vitality and growth of the ATE community is closely linked to industry trends and needs as well as the acumen of the PIs and their institutions who educate technicians. As such, faculty must: 1) work with their institutional administration; 2) effectively manage both programs and project/center activities; 3) maintain industry connections that include local, statewide, and national economic development efforts; and 4) maintain and cultivate networks with other grantees across funding agencies. [Solicitation provides examples.]



ATE Program Parameters



Four Program Tracks

Track 2: ATE Projects (cont.)

Teacher Preparation: The foundation for advanced technological education is grounded in strong STEM education in K-12 schools. The preparation of future STEM and career and technical education (CTE) teachers who will facilitate student learning in mathematics and science and cultivate an interest in technological careers is an important component of educating the skilled technical workforce. ATE teacher preparation projects help prepare a future teaching workforce that is skilled in teaching science and mathematics, understands the technological workplace, and can prepare students to use a variety of approaches to solve real world technology related problems using design processes and principles.

Teacher Preparation projects must involve both two-year and four-year institutions unless the two-year institution offers a four-year baccalaureate program in teacher preparation. Other partners include industry to inform the program about the changing technological workplace.



ATE Program Parameters

Four Program Tracks



Track 2: ATE Projects (cont.)

Business and Entrepreneurial Skills Development for Students: In addition to technical skills and disciplinary content, students entering the advanced technological industries environment need skills that allow them to understand and work effectively in this environment. Many companies have a global presence, and students need to understand that the global economy affects them as employees. Another sector of the industry is comprised of small start-up companies, and these have different attributes than large established firms. Students need to understand these attributes and differences to be effective employees.

Business and entrepreneurship skills can be developed in students enrolled in technician education programs by engaging students in problem-based learning using projects of interest to local industry, working with local economic investment organizations, and developing incubator programs that provide experiences for students to interact with entrepreneurs.



ATE Program Parameters

Four Program Tracks



Track 3: *Consortia for Innovations in Technician Education*

Track 4: *ATE Centers*

Neither of these tracks is likely to be appropriate for your institutions at this time. However, you are welcome and encouraged to read the ATE Program Solicitation to learn more about them.



Evolution of a Program Solicitation



NSF 18-571

Synopsis of Program:

With an emphasis on two-year Institutions of Higher Education (IHEs), the Advanced Technological Education (ATE) program focuses on the education of technicians for the high-technology fields that drive our nation's economy. The program involves partnerships between academic institutions (grades 7-12, IHEs) and industry to promote improvement in the education of science and engineering technicians at the undergraduate and secondary institution school levels. The ATE program supports curriculum development; professional development of college faculty and secondary school teachers; career pathways; and other activities. The program invites research proposals that advance the knowledge base related to technician education. It is expected that projects will be faculty driven and that courses and programs credit bearing, although materials developed may also be used for incumbent worker education.

NSF 21-598

Synopsis of Program:

With a focus on two-year Institutions of Higher Education (IHEs), the Advanced Technological Education (ATE) program supports the education of technicians for the high-technology fields that drive our nation's economy. The program involves partnerships between academic institutions (grades 7-12, IHEs), industry, and economic development agencies to promote improvement in the education of science and engineering technicians at the undergraduate and secondary institution school levels. The ATE program supports curriculum development; professional development of college faculty and secondary school teachers; career pathways; and other activities. The program invites applied research proposals that advance the knowledge base related to technician education. It is required that projects be faculty driven and that courses and programs are credit bearing, although materials developed may also be used for incumbent worker education.



Evolution of a Program Solicitation



NSF 18-571

Synopsis of Program:

With an emphasis on two-year Institutions of Higher Education (IHEs), the Advanced Technological Education (ATE) program focuses on the education of technicians for the high-technology fields that drive our nation's economy. The program involves partnerships between academic institutions (grades 7-12, IHEs) and industry to promote improvement in the education of science and engineering technicians at the undergraduate and secondary institution school levels. The ATE program supports curriculum development; professional development of college faculty and secondary school teachers; career pathways; and other activities. The program invites research proposals that advance the knowledge base related to technician education. It is expected that projects will be faculty driven and that courses and programs credit bearing, although materials developed may also be used for incumbent worker education.

NSF 21-598

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Getting Acquainted with the ATE Community



https://www.flickr.com/photos/florida_photo_guy/50320534707/in/photostream

This work is supported by National Science Foundation Grant No. DUE 1826514.



ATE Central



ATE 101 Community Resources Events About

Sign In Search

What is ATE?

ATE is Advanced Technological Education. With an emphasis on two-year colleges, the National Science Foundation's ATE program focuses on the education of technicians for the high-technology fields that drive our nation's economy.

Learn More About ATE
What Can ATE Central Do for Me?

ATE Events



NCNGM Mechatronics Webinar
Webinar
February 25 Online



IMS Digital Credentials Summit
Summit
February 28 Atlanta, Georgia

ATE Projects and Centers



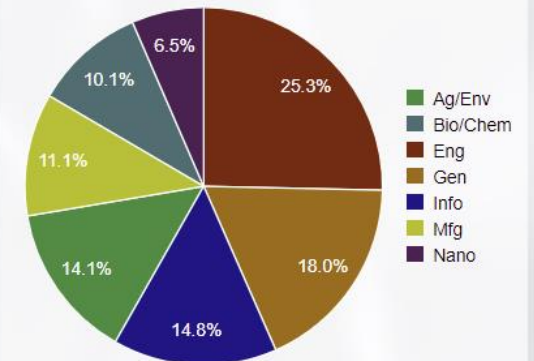
All Active Inactive New All Centers Projects
All Mfg Ag/Env Bio/Chem Eng Gen Info Nano

ATE Resources

ATE Fact Sheet

Active ATE Centers	27
Active ATE Projects	357
ATE Resources	6,072
New Projects/Centers	47
New Resources	181

ATE Resources by Subject Area



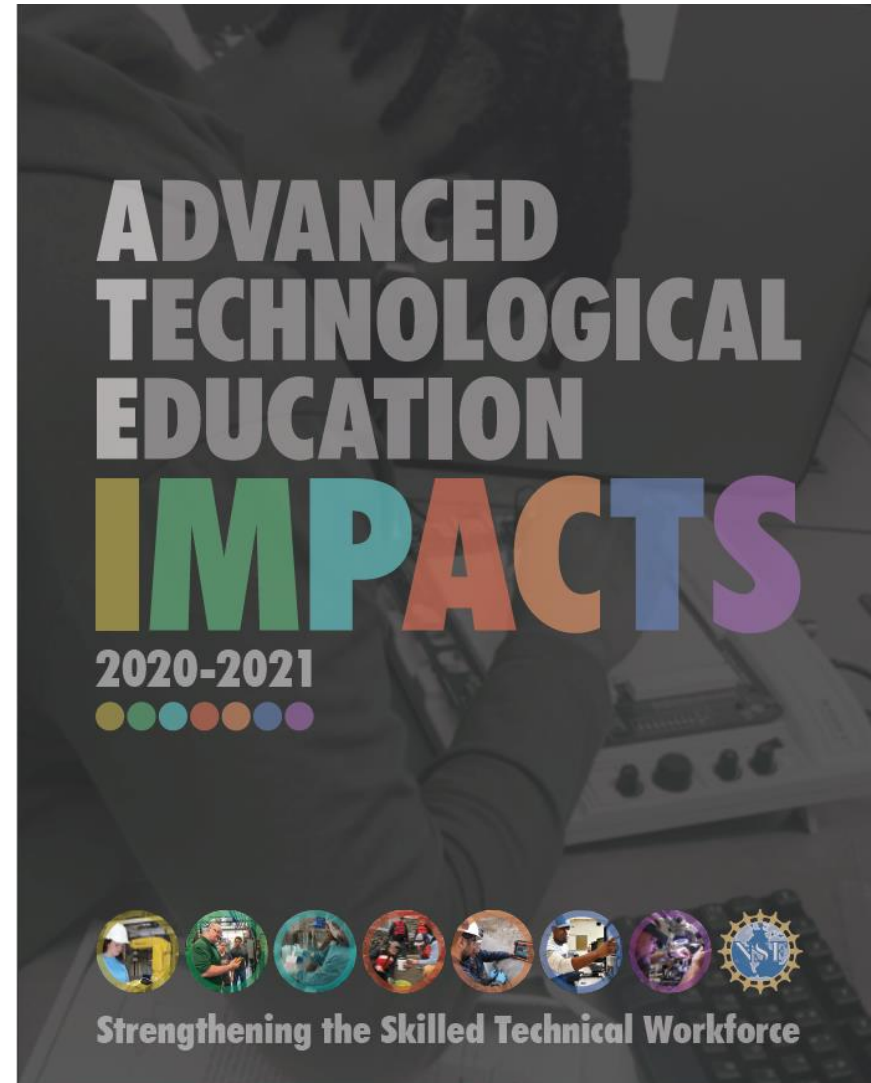
ATE Events by Subject Area

<https://atecentral.net>

This work is supported by National Science Foundation Grant No. DUE 1826514.



ATE Impacts Book 2020-2021



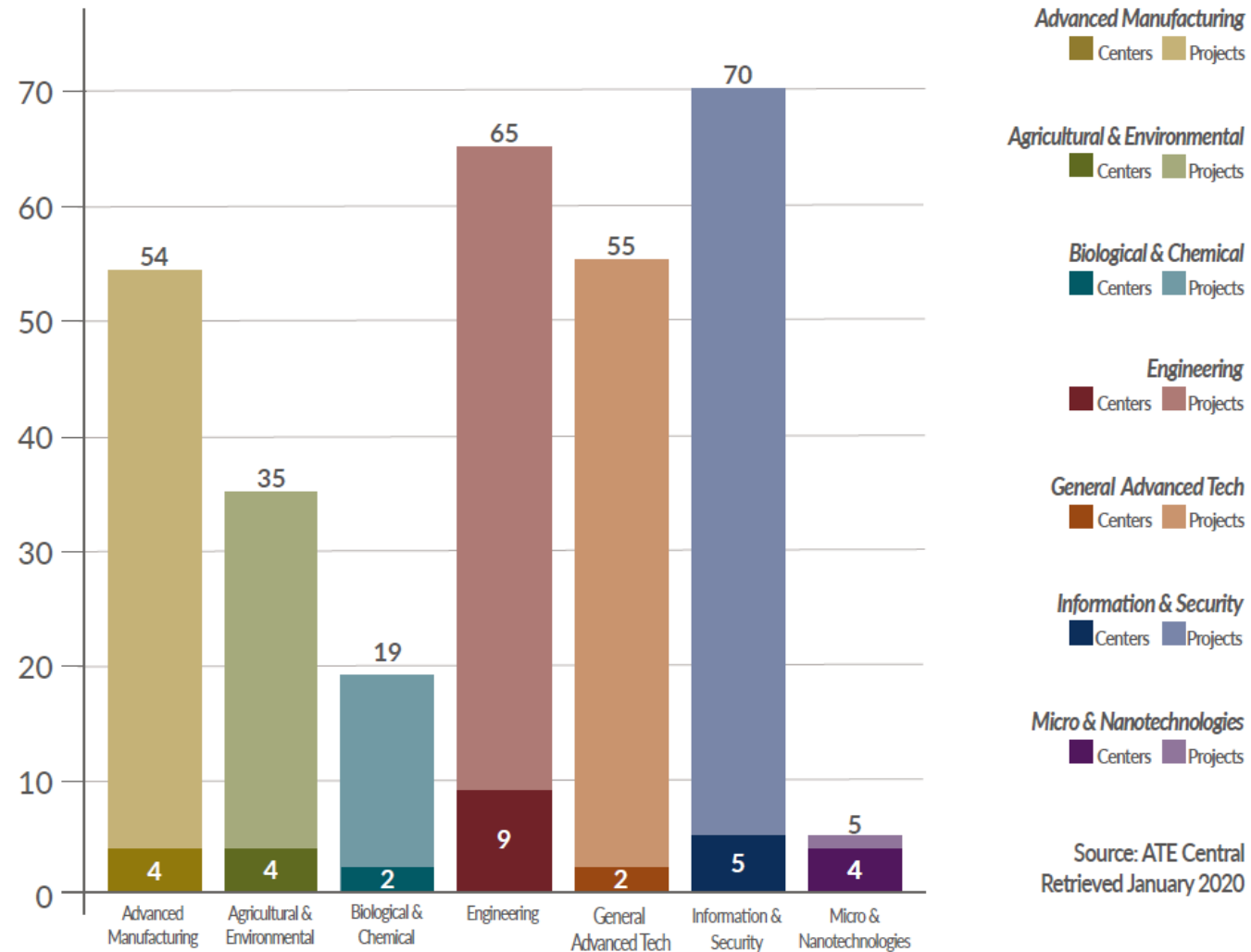
<https://ateimpacts.net/book>

This work is supported by National Science Foundation Grant No. DUE 1826514.



ATE by the Numbers

ALL ATE PROJECTS & CENTERS BY SUBJECT AREA



Source: ATE Central
Retrieved January 2020

This work is supported by National Science Foundation Grant No. DUE 1826514.



ATE by the Numbers

MOST ATE GRANTEES ARE LOCATED AT TWO-YEAR COLLEGES (n=279)



73%



18%



6%

84%

OF ATE INITIATIVES THAT MODIFIED DEGREE OR CERTIFICATE PROGRAMS IN 2018 EMPHASIZED RECRUITMENT FROM GROUPS UNDERREPRESENTED IN STEM FIELDS.



ATE by the Numbers

IN 2018, ATE PROJECTS AND CENTERS DEVELOPED



7,110
MATERIALS



SUCH AS COURSES, MODULES, LAB EXPERIMENTS, OR OTHER TYPES OF EDUCATIONAL RESOURCES.

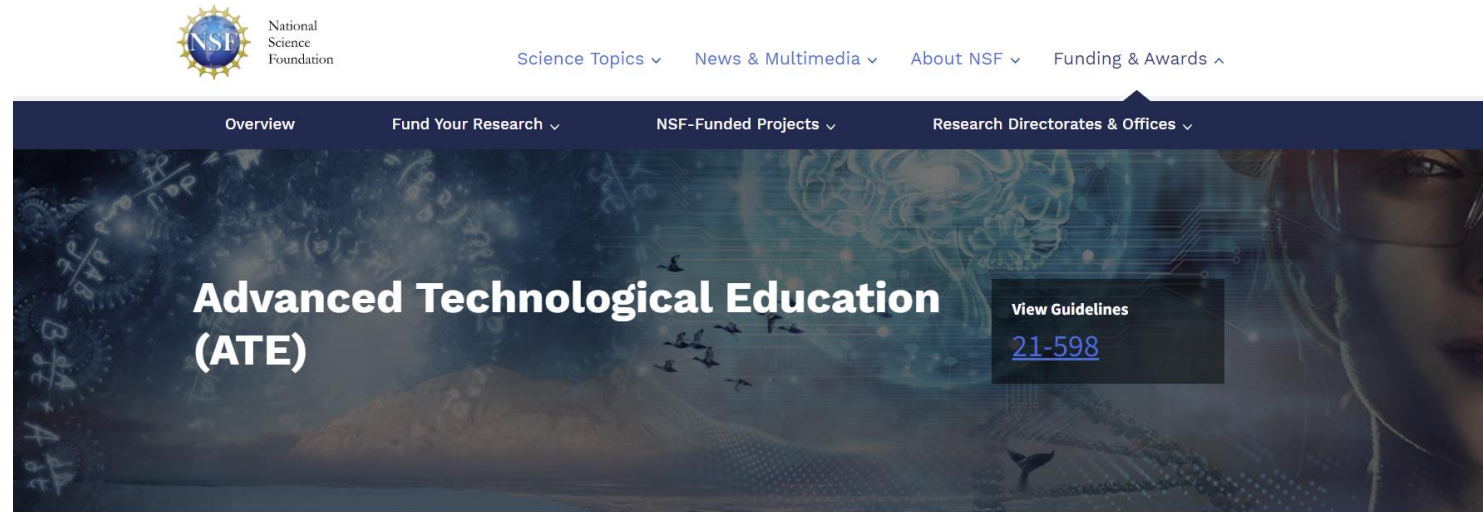
1,080

PROFESSIONAL DEVELOPMENT ACTIVITIES

IN 2018, ATE PROJECTS AND CENTERS PROVIDED WEBINARS, WORKSHOPS, SUMMER INSTITUTES, AND OTHER PROFESSIONAL DEVELOPMENT OPPORTUNITIES FOR CURRENT AND FUTURE EDUCATORS



View Recent ATE Award Abstracts



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<https://beta.nsf.gov/funding/opportunities/advanced-technological-education-ate>



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 Alaska(2)
 Alabama(4)
 Arkansas(6)
 American Samoa(1)
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NSF Organization
 Direct For Computer & Info Scie & Enginr(5)
 Directorate For Geosciences(1)
 Directorate For Engineering (22)
 Direct For Biological Sciences(5)
 Direct For Education and Human Resources(411)

Award Amount
 Less than or equal \$50,000(2)
 Between \$50,001 - \$100,000(2)
 Between \$100,001 - \$500,000(206)

Phase II IUOCR at The University of Toledo: Center for Disruptive Musculoskeletal Innovations (CDMI)
 Award Number:1916636; Principal Investigator:Vijay Goel; Co-Principal Investigator:Anand Agarwal; Organization:University of Toledo;NSF Organization:IIP Start Date:12/15/2019; Award Amount:\$425,610.00; Relevance:48.0;

EvaluATE: Evaluation Learning and Resource Hub for Advanced Technological Education
 Award Number:1841783; Principal Investigator:Lyssa Becho; Co-Principal Investigator:Ayesha Boyce, Emily Binder, Lori Wingate, Lyssa Becho, Michael Harnar; Organization:Western Michigan University;NSF Organization:DUE Start Date:01/15/2019; Award Amount:\$6,407,856.00; Relevance:48.0;

Advanced Technological Education: Collaborative Outreach and Engagement to Communicate Impacts and Outcomes
 Award Number:2032738; Principal Investigator:Rachael Bower; Co-Principal Investigator:Edward Almsay; Organization:University of Wisconsin-Madison;NSF Organization:DUE Start Date:01/01/2021; Award Amount:\$1,370,029.00; Relevance:48.0;

I/UCRC Phaser III at North Carolina State University: Center for Advanced Forestry Systems
 Award Number:1916552; Principal Investigator:Rachel Cook; Co-Principal Investigator:; Organization:North Carolina State University;NSF Organization:IIP Start Date:12/15/2019; Award Amount:\$365,546.00; Relevance:48.0;


AccessATE: Making Community College Technician Education More Accessible for Everyone
 Award Number:1836721; Principal Investigator:Rachael Bower; Co-Principal Investigator:Sam Catherine Johnston, Donna Lange, Rory Cooper, Edward Almsay; Organization:University of Wisconsin-Madison;NSF Organization:DUE Start Date:09/01/2018; Award Amount:\$2,477,761.00; Relevance:48.0;

Work-focused Experiential Learning to Increase STEM Student Retention and Graduation at Two-year Hispanic-serving Institutions
 Award Number:1953763; Principal Investigator:Paul Ross; Co-Principal Investigator:Nicolas Rouse, Cynthia Pickering, Caroline VanIngen-Dunn, Deborah Santiago; Organization:Maricopa County Community College District;NSF Organization:DUE Start Date:04/15/2020; Award Amount:\$2,495,568.00; Relevance:48.0;

Curriculum for Advanced Applicator Technicians
 Award Number:1902427; Principal Investigator:Charles Mitsdarfer; Co-Principal Investigator:Gerald Lighty, Theresa Meers; Organization:Parkland College;NSF Organization:DUE Start Date:07/15/2019; Award Amount:\$385,929.00; Relevance:48.0;

This work is supported by National Science Foundation Grant No. DUE 1826514.



 National Science Foundation
WHERE DISCOVERIES BEGIN

SEARCH

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Awards

Award Abstract # 1902427
Curriculum for Advanced Applicator Technicians

NSF Org:	DUE Division Of Undergraduate Education
Awardee:	PARKLAND COLLEGE
Initial Amendment Date:	June 21, 2019
Latest Amendment Date:	July 30, 2021
Award Number:	1902427
Award Instrument:	Standard Grant
Program Manager:	Jill Nelson jnelson@nsf.gov (703)292-4359 DUE Division Of Undergraduate Education EHR Direct For Education and Human Resources
Start Date:	July 15, 2019
End Date:	June 30, 2023 (Estimated)
Total Intended Award Amount:	\$385,929.00
Total Awarded Amount to Date:	\$385,929.00
Funds Obligated to Date:	FY 2019 = \$385,929.00
	Charles Mitsdarfer (Principal Investigator) cmitsdarfer@parkland.edu



ABSTRACT

Advanced Applicator Technicians mix and/or apply pesticides, herbicides, fungicides, or insecticides through sprays, dusts, vapors, soil incorporation, or chemical applications. These jobs are critical for the modern agriculture industry as they help ensure strong yields for farmers and agriculture management companies. As the agriculture sector continues to modernize and become more precision-based, the Applicator Technician position is also modernizing and now requires greater technical expertise and training. Due to the shortage of a qualified candidate pool, agribusiness organizations often struggle to fill applicator positions. Existing programs at community colleges are designed for either general agriculture or equipment technicians and do not specifically address the specialized knowledge required by an Applicator Technician. The goal of this project is to meet the educational and training needs of this critical sector by preparing highly skilled technicians and creating pathways for educational advancement in the state of Illinois.

The project will create four new courses, a professional certificate program, and a two-year Associate of Applied Science degree to prepare students and incumbent workers for careers as Advanced Applicator Technicians. The creation of these credentials builds on previously developed precision agriculture coursework through Parkland's prior NSF-ATE funded Precision Agriculture Curriculum Enhancement project. Additionally, the project will build relationships with high schools and industries, to increase understanding and interest in the Applicator Technician sector, thus contributing to a regional workforce pipeline. The project will also seek to improve the representation of veterans in the precision agriculture sector to ensure agribusiness industries have a diverse workforce. This project is funded by the Advanced Technological Education program that focuses on the education of technicians for the advanced-technology fields that drive the nation's economy.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

This work is supported by National Science Foundation Grant No. DUE 1826514.



NSF PAPPG – NSF 22-1 – Applies to ALL Proposals



PROPOSAL & AWARD POLICIES & PROCEDURES GUIDE (PAPPG) Table of Contents

Introduction:

- A. About the National Science Foundation
- B. Foreword
- C. Acronym List
- D. Definitions & NSF-Grantee Relationships
- E. NSF Organizations

Part I: Proposal Preparation and Submission Guidelines

Chapter I: Pre-Submission Information.....I-1

A.	NSF Proposal Preparation and Submission	I-1
B.	NSF Programs and Funding Opportunities	I-1
C.	Categories of Funding Opportunities	I-2
1.	Program Descriptions	I-2
2.	Program Announcements	I-2
3.	Program Solicitations	I-2
4.	Dear Colleague Letters	I-3
D.	Types of Submissions	I-3
1.	Letters of Intent	I-3
2.	Preliminary Proposals	I-3
a.	Invite/Not Invite Decisions	I-4
b.	Encourage/Discourage Decisions	I-4
3.	Full Proposals	I-4
E.	Who May Submit Proposals	I-4
	Categories of Proposers	I-5
1.	Institutions of Higher Education (IHEs)	I-5
	Special Instructions for International Branch Campuses of U.S. IHEs	I-5
2.	Non-profit, Non-academic Organizations	I-5
3.	For-profit Organizations	I-5
4.	State and Local Governments	I-5
5.	Unaffiliated Individuals	I-5
6.	Foreign organizations	I-6
7.	Other Federal Agencies	I-6
F.	When to Submit Proposals	I-7
1.	Target Dates	I-7
2.	Deadline Dates	I-7
3.	Submission Windows	I-7
	Special Exceptions to NSF's Deadline Date Policy	I-7
	Natural or Anthropogenic Events	I-7
	Closure of NSF	I-8
G.	How to Submit Proposals	I-8
1.	Submission Instructions	I-8
2.	Requirements Relating to Data Universal Numbering System (DUNS) Numbers and Registration in the System for Award Management (SAM)	I-8
3.	NSF ID	I-9
4.	Proposal Receipt	I-9
H.	Proposal Processing	I-9

Chapter II: Proposal Preparation InstructionsII-1

A.	Conformance with Instructions for Proposal Preparation	II-1
1.	Deviations from NSF Proposal Preparation and Submission Requirements	II-1
2.	Requests for Reasonable and Accessibility Accommodations	II-1
B.	Format of the Proposal	II-2
1.	Proposal Pagination Instructions	II-3
2.	Proposal Font, Spacing and Margin Requirements	II-3
3.	Page Formatting	II-3
C.	Proposal Contents	II-4
1.	Single-Copy Documents	II-4
a.	Authorization to Deviate from NSF Proposal Preparation Requirements	II-4
b.	List of Suggested Reviewers or Reviewers Not to Include	II-4
c.	Proprietary or Privileged Information	II-4
d.	Proposal Certifications	II-4
e.	Collaborators & Other Affiliations Information	II-6
f.	Submission of Proposals by Former NSF Staff	II-7
2.	Sections of the Proposal	II-7
a.	Cover Sheet	II-8
b.	Project Summary	II-11
c.	Table of Contents	II-11
d.	Project Description	II-11
(i)	Content	II-11
(ii)	Page Limitations and Inclusion of Uniform Resource Locators (URLs) within the Project Description	II-12
(iii)	Results from Prior NSF Support	II-12
(iv)	Unfunded Collaborations	II-13
(v)	Group Proposals	II-13
(vi)	Proposals for Renewed Support	II-13
e.	References Cited	II-13
f.	Biographical Sketch(es)	II-14
(i)	Senior Personnel	II-14
(a)	Professional Preparation	II-14
(b)	Appointments	II-14
(c)	Products	II-14
(d)	Synergistic Activities	II-15
(ii)	Other Personnel	II-15
(iii)	Equipment Proposals	II-15
g.	Budget and Budget Justification	II-15
(i)	Salaries and Wages	II-16
(a)	Senior Personnel Salaries & Wages Policy	II-16
(b)	Administrative and Clerical Salaries & Wages Policy	II-16
(c)	Procedures	II-17
(d)	Confidential Budgetary Information	II-17
(ii)	Fringe Benefits	II-17
(iii)	Equipment	II-18
(iv)	Travel	II-18
(a)	General	II-18
(b)	Domestic Travel	II-18
(c)	Foreign Travel	II-18
(v)	Participant Support	II-19
(vi)	Other Direct Costs	II-19
(a)	Materials and Supplies (including Costs of Computing Devices)	II-20
(b)	Publication/Documentation/Dissemination	II-20
(c)	Consultant Services (also referred to as Professional Service Costs)	II-20
(d)	Computer Services	II-20
(e)	Subawards	II-21



NSF Merit Review Principles



- All NSF projects should be of the highest quality and **have the potential to advance, if not transform, the frontiers of knowledge.**
- **NSF projects, in the aggregate, should contribute more broadly to achieving societal goals.** These broader impacts may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- **Meaningful assessment and evaluation of NSF funded projects** should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

https://www.nsf.gov/pubs/policydocs/pappg22_1/pappg_3.jsp#IIIA



Merit Review Process from 30,000 Feet



Informed by the Merit Review Principles, all proposals submitted to NSF are evaluated according to the two merit review criteria of **Intellectual Merit** and **Broader Impacts**. These will be examined more closely in a future webinar.



https://www.nsf.gov/bfa/dias/policy/merit_review



Q&A



<https://www.thebluediamondgallery.com/wooden-tile/q/questions.html>

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