# DIRECTORATE FOR STEM EDUCATION (EDU) $1,496,180,000

**EDU Funding**
(Dollars in Millions)

| | FY 2022 Actual[1] | FY 2023 Estimate Base | Supplemental Base | Supplemental and Science | FY 2023 Estimate Total | FY 2024 Request REVISED | Change over FY 2023 Base Total[2] Amount | Change over FY 2023 Base Total[2] Percent |
|---|---|---|---|---|---|---|---|---|
| Division of Equity for Excellence in STEM (EES) | $227.03 | $257.76 | - | $23.00 | $280.76 | $326.32 | $68.56 | 26.6% |
| Division of Graduate Education (DGE) | 432.11 | 393.12 | 92.00 | 40.00 | 525.12 | 563.18 | 78.06 | 16.1% |
| Division of Res. on Learning in Formal & Informal Settings (DRL) | 211.98 | 223.02 | - | 26.90 | 249.92 | 255.33 | 32.31 | 14.5% |
| Division of Undergraduate Education (DUE) | 275.60 | 280.10 | - | 35.10 | 315.20 | 351.35 | 71.25 | 25.4% |
| **Total** | **$1,146.72** | **$1,154.00** | **$92.00** | **$125.00** | **$1,371.00** | **$1,496.18** | **$250.18** | **20.1%** |

[1] Does not capture funding provided by the American Rescue Plan supplemental appropriation.

[2] Captures both the FY 2023 Omnibus appropriation and the Disaster Relief Supplemental base.

## About EDU

The work of EDU closely aligns with the Administration's priorities of advancing equity, building a workforce for the needs of today and the industries of the future, and expanding opportunities in STEM everywhere. Through existing programs, EDU supports activities and research that aim to increase participation in science and engineering of individuals from racial and ethnic groups traditionally underrepresented in STEM fields, including at minority serving institutions (MSIs). STEM education and research play a central role in fostering the necessary social and economic infrastructure to support important priorities to expand clean energy, strengthen the economy, and maintain global competitiveness in emerging technologies. Now, more than ever, the Nation needs a robust STEM enterprise that includes a diverse, highly skilled U.S. STEM workforce. Both a strong STEM workforce and a STEM-literate public are needed to address societal challenges exacerbated by the global pandemic and climate change and to support a vibrant U.S. economy.

In recent years, EDU has focused on NSF priorities to reach the Missing Millions (NSF's effort to reduce the significant talent gap in STEM by increasing diversity), create and sustain new partnerships, and strengthen core STEM education activities that drive learning, broadening participation, and workforce development. EDU has expanded efforts to understand and support the needs of students whose preparation, talents, intelligence, and entrepreneurship have been historically unrecognized and underused. New partnerships with industry, private philanthropy, and other federal agencies have provided opportunities to build new research infrastructures and mutually beneficial collaborations, to expand the STEM education research community, and to increase scholarship, internship and experiential opportunities for students. EDU has a robust portfolio of programs that invest in new discoveries in STEM education, in both formal and informal learning environments. EDU's basic and use-inspired translational research informs STEM programs, policies, processes and practices, whether results are applied immediately to improve practice, or build the knowledge base to inform innovations well into the future.

In FY 2024, EDU will continue and accelerate its efforts in identifying new strategic partners to expand experiential learning opportunities, bring greater teaching and learning possibilities through novel and emerging technologies, and create innovative ecosystems to foster greater discovery and mobilize knowledge to improve STEM education at every juncture of education, especially in preK-12 schools and broad access institutions of higher learning, such as community colleges and Minority Serving Institutions (MSIs). EDU will increase both outreach and engagement with investigators, institutions of higher learning, school districts, and organizations in distressed and underserved

communities and regions around the U.S. For example, special attention will be given to the aforementioned entities located in EPSCoR jurisdictions. Also, EDU will launch a stand-alone program in DUE in FY 2024 to enhance support for teacher leadership as established in CHIPS & Science Act.

EDU division allocations are designed to accomplish the collective work of the directorate, best characterized by three themes: contributing to research on STEM learning and learning environments, broadening participation and institutional capacity in STEM, and developing the STEM professional workforce. Efforts to transform STEM learning and learning environments by researching and developing successful practices in STEM education ensure that everyone can participate in the STEM enterprise. Discovery Research PreK-12 (DRK-12) and Advancing Informal STEM Learning (AISL) programs support evidence-based approaches to learning in formal and informal settings. The Improving Undergraduate Education (IUSE) program supports projects that study what works for whom and how to transform undergraduate STEM education.

The opportunities made possible by federal investments in STEM should serve and draw from the full and diverse talent pool of the Nation. As a natural extension of EDU's experience in broadening participation, EDU serves as the lead directorate and the steward of funds designated for NSF's Eddie Bernice Johnson INCLUDES initiative, which supports collaborative efforts to generate and disseminate knowledge to understand what interventions work, under what conditions, to broaden participation in STEM. EDU also continues to support the Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), the Improving Undergraduate STEM Education: Hispanic-Serving Institutions (IUSE:HSI) program, and the Tribal Colleges and Universities Program (TCUP). EDU's support facilitates the advancement of early career STEM professionals at MSIs and enhances the academic experiences of students studying STEM at MSIs.

Through its scholarship, fellowship, and traineeship programs, EDU encourages the development of talent at the undergraduate and graduate levels. EDU programs such as the Advanced Technological Education (ATE) and NSF Scholarships in STEM (S-STEM) address the Nation's critical need for a skilled technical workforce that reflects the diversity of society and is attractive to employers that offer competitive salaries. The Centers of Research Excellence in Science and Technology (CREST), the NSF Research Traineeship (NRT) program, and the Graduate Research Fellowship Program (GRFP) serve to provide research experiences needed to participate fully in the workforce of the future. In FY 2024, all four EDU divisions will collaborate to sponsor more opportunities for persons with disabilities.

EDU also supports NSF and Administration priorities through NSF-wide activities. In FY 2024, EDU will continue to support the education and workforce aspects of SaTC and NITRD. EDU is also partnering with TIP in programs, such as Experiential Learning in Emerging and Novel Technologies (ExLENT), Pathways to Enable Open-Source Ecosystems (POSE), and Accelerating Research Translation (ART).

EDU continues its strong emphasis on evidence-based decision making and generating robust evidence to inform the development, management, and assessment of its portfolios of investment. A multi-year learning agenda (evidence-building plan) for EDU's STEM human capital development programs will inform and guide future actions. EDU experts in evaluation will continue to collaborate with staff in NSF's Evaluation and Assessment Capability in developing NSF-wide learning agendas and with other federal agencies to share best practices, work toward the use of common metrics and instruments, strengthen evidence-building capacity for decision-making, and support transparency and accountability.

**Major Investments**

**EDU Major Investments**
(Dollars in Millions)

| Area of Investment[1,2] | FY 2022 Actual | FY 2023 Estimate Base Total[3] | FY 2024 Request REVISED | Change over FY 2023 Estimate Base Total[3] Amount | Percent |
|---|---|---|---|---|---|
| Advanced Manufacturing | $11.43 | $6.00 | $6.00 | - | - |
| Artificial Intelligence | 59.61 | 35.00 | 42.50 | 7.50 | 21.4% |
| Biotechnology | 9.37 | 9.00 | 10.00 | 1.00 | 11.1% |
| Eddie Bernice Johnson INCLUDES Initative | 23.01 | 27.00 | 50.50 | 23.50 | 87.0% |
| Graduate Research Fellowship Program | 290.01 | 322.00 | 380.32 | 58.32 | 18.1% |
| Improving Undergraduate STEM Education | 93.50 | 93.50 | 93.50 | - | - |
| Microelectronics/Semiconductors | - | - | 6.00 | 6.00 | N/A |
| Quantum Information Science | 14.08 | 4.00 | 5.00 | 1.00 | 25.0% |
| Secure & Trustworthy Cyberspace | 63.00 | 74.00 | 74.00 | - | - |
| STEM Education Postdoctoral Research Fellowship | - | 10.00 | 10.50 | 0.50 | 5.0% |
| STEM Teacher Corps | - | - | 60.00 | 60.00 | N/A |

[1] Major investments may have funding overlap and thus should not be summed.

[2] This table reflects this directorate's support for selected areas of investment. In other directorate narratives, areas of investment displayed in this table may differ and thus should not be summed across narratives.

[3] Captures both the FY 2023 Omnibus appropriation and the Disaster Relief Supplemental base.

To learn more about cross-agency themes and initiatives supported by EDU, such as Advanced Wireless, Artificial Intelligence, Biotechnology, Climate, Microelectronics and Semiconductors, Quantum Information Science, and Secure and Trustworthy Computing, see individual narratives in the NSF-Wide Investments chapter.

- NSF's Eddie Bernice Johnson INCLUDES Initiative: As steward of this program agency-wide, INCLUDES Initiative will continue to transform education and career pathways to help broaden participation in science and engineering and build a diverse, highly skilled American workforce. For more information, see the Big Ideas narrative within the Cross Theme Topics section of the NSF-Wide Investments chapter.

- GRFP: In FY 2024, funding for GRFP will continue to be stewarded in EDU. For more information on GRFP, see the Major Investments in STEM Graduate Education narrative within the Cross Theme Topics section of the NSF-Wide Investments chapter.

- IUSE: EDU will lead the NSF-wide IUSE activity. For more information, see the IUSE narrative within the Cross Theme Topics section of the NSF-Wide Investments chapter.

- STEM Education Postdoctoral Research Fellowship: The division formally established the program in FY 2023 to support postdoctoral awards designed to enhance the research knowledge, skills, and practices of recent doctoral graduates in STEM, STEM education, education, and related disciplines. In FY 2024 EDU will continue to award postdoctoral fellowships in STEM education to grow the community of researchers prepared to innovate across the STEM education ecosystem.

- The National STEM Teacher Corps will be launched in FY 2024 to create opportunities for the

professional growth of teachers, with a focus on recruiting diverse STEM educators to advance equity based on race, ethnicity, sex, socioeconomic status, age, disability status, geography, and language ability.

**Centers Programs**

**EDU Funding for Centers Programs**
(Dollars in Millions)

| | FY 2022 Actual | FY 2023 Estimate Base Total[1] | FY 2024 Request | Change over FY 2023 Estimate Base Total[1] | |
| --- | --- | --- | --- | --- | --- |
| | | | | Amount | Percent |
| Artificial Intelligence Research Institutes (DRL) | $7.68 | $12.09 | $12.09 | - | - |

[1]Captures both the FY 2023 Omnibus appropriation and the Disaster Relief Supplemental base.

For detailed information on individual centers programs, please see the Cross Theme Topics section of the NSF-Wide Investments chapter.

**People Numbers and Funding Profiles**

For detail on the People Numbers and Funding Profile tables see the Summary Tables chapter.

**Appropriations Language and Explanation of Carryover**

For more information on EDU appropriations language and carryover see the Technical Information chapter.

**DIVISION OF EQUITY FOR EXCELLENCE IN STEM (EES)**

**EES Funding**

(Dollars in Millions)

| | FY 2022 Actual[1] | FY 2023 Estimate Base | Disaster Relief Supplemental Base | CHIPS and Science | FY 2023 Estimate Total | FY 2024 Request | Change over FY 2023 Base Total[2] Amount | Percent |
|---|---|---|---|---|---|---|---|---|
| **Total** | **$227.03** | **$257.76** | **-** | **$23.00** | **$280.76** | **$326.32** | **$68.56** | **26.6%** |
| Research | 152.89 | 175.86 | - | 21.00 | 196.86 | 225.49 | 49.63 | 28.2% |
| Education | 74.14 | 81.90 | - | 2.00 | 83.90 | 100.83 | 18.93 | 23.1% |

[1]Does not capture funding provided by the American Rescue Plan supplemental appropriation.

[2]Captures both the FY 2023 Omnibus appropriation and the Disaster Relief Supplemental base.

Aligned with the agency's goal to inspire and reach the Missing Millions in STEM, EES serves as a focal point for NSF's agency-wide commitment to broadening participation of groups historically underrepresented in STEM—minorities, women, and persons with disabilities—by enhancing the quality and excellence of STEM education and research opportunities. EES's mission is to create and grow a vibrant and diverse U.S. STEM workforce by supporting the inclusion and participation of individuals historically underrepresented in STEM and the institutions that serve them. Programs within EES have a strong focus on partnerships, alliances, and collaborations in support of institutional transformation and capacity building that lead to increased STEM participation of underrepresented groups. Priority is placed on investments in innovative and transformative strategies that serve as models for achieving the full participation of these populations and for providing opportunities for educators, researchers, and institutions, particularly at MSIs. EES will continue efforts to better engage and serve persons with disabilities, through a new program solicitation on "Workplace Equity for Persons with Disabilities in STEM and STEM Education."

**FY 2024 Summary**

Research
- AGEP funds innovative STEM faculty career pathway models for advancing doctoral students, postdoctoral scholars and faculty historically underrepresented in STEM. The AGEP program will maintain efforts to complete awardee site reviews, share best practices and collaborative partnerships findings, and network through the annual AGEP research conference.
- CREST program focuses on building research capacity at MSIs that have undergraduate enrollments of 50 percent or more of members from underrepresented groups among those holding advanced degrees in science or engineering fields. The program will continue to fund CREST centers, HBCUs through the Research Infrastructure for Science and Engineering component, and postdoctoral research fellows through the CREST Postdoc Research Program.
- The EDU Core Research (ECR) program supports fundamental STEM education research and capacity building initiatives. Research projects explore persistent and emerging, curiosity-driven, and use-inspired basic research questions with the goal of generating foundational knowledge in three broadly conceived research areas: STEM learning and learning environments, broadening participation in STEM fields, and STEM workforce development. ECR research has the potential to inform efforts at the institutional, structural, organizational, societal, and systemic levels to

enhance STEM teaching, learning, and participation in STEM education and the workforce. ECR also supports activities that build individuals' capacity to carry out high quality STEM education research. In FY 2024, ECR will continue to support fundamental research that makes important contributions to the general, explanatory knowledge that underlies STEM education, and the development of new methodologies to tackle new questions. In addition, EDU will continue efforts through the ECR Building Capacity in STEM Education Research initiative to broaden the pool of researchers who conduct, and build individuals' capacity to carry out, the high-quality STEM education research that enhances the Nation's STEM education enterprise.

- IUSE:HSI supports the improvement of undergraduate education and builds capacity for STEM education and research at HSIs that have previously received little or no funding from NSF. Outreach efforts will engage institutions new to NSF. This program is a partnership between EES with DUE (see DUE section on HSI).
- NSF's Eddie Bernice Johnson INCLUDES Initiative funds broadening participation projects and related research through Alliances and other existing NSF broadening participation portfolio programs. These include pilot projects, planning grants, and supplements that serve as on-ramps to the Alliances and the INCLUDES National Network.
- TCUP supports the design, implementation, and assessment of comprehensive institutional improvements in STEM instruction to advance the quality of student preparation in STEM at tribal colleges and universities. TCUP will continue to support projects to build and enhance STEM research capacity at TCUP institutions. TCUP will support eligible institutions through the TCUP Enterprise Advancement Centers to partner with tribal communities to enhance their ability to respond to community needs. TCUP will also continue to support in-service K-12 teacher professional development in the relevant service area, as well as upgrades to cyberinfrastructure to administer STEM programs of study and research at TCUP eligible institutions.

<u>Education</u>
- ADVANCE will continue to support evidence-based systemic change strategies to promote equity in STEM academic workplaces. ADVANCE will continue to support adaptation of successful practices for achieving institutional change.
- Excellence Awards in Science and Engineering (EASE) will continue to coordinate and support the Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) and Presidential Awards for Excellence in Science, Mathematics, and Engineering (PAESMEM) awards.
- HBCU-UP will support research for HBCU STEM faculty, enhance the academic experience of students, increase numbers of students completing STEM degrees, and support institutional transformation efforts. The program will continue to support broadening participation research through its HBCU-UP Broadening Participating Research Centers.
- Louis Stokes Alliances for Minority Participation (LSAMP) will continue to support an increased focus on broadening participation in STEM research and evaluation to expand knowledge about effective strategies for student recruitment, retention, and persistence in STEM programs. Additionally, LSAMP will emphasize support for evidence-based interventions that are proven to increase STEM baccalaureate degree production, particularly mentoring and early experiential research experiences nationally and abroad and continue support for STEM post-baccalaureate activities and will continue to support activities at the transfer and transition points.

## DIVISION OF GRADUATE EDUCATION (DGE)

**DGE Funding**

(Dollars in Millions)

| | FY 2022 Actual[1] | FY 2023 Estimate Base | Disaster Relief Supplemental Base | CHIPS and Science | FY 2023 Estimate Total | FY 2024 Request | Change over FY 2023 Base Total[2] Amount | Percent |
|---|---|---|---|---|---|---|---|---|
| **Total** | **$432.11** | **$393.12** | **$92.00** | **$40.00** | **$525.12** | **$563.18** | **$78.06** | **16.1%** |
| Research | 19.11 | 19.12 | - | - | 19.12 | 20.86 | 1.74 | 9.1% |
| Education | 413.00 | 374.00 | 92.00 | 40.00 | 506.00 | 542.32 | 76.32 | 16.4% |

[1] Does not capture funding provided by the American Rescue Plan supplemental appropriation.

[2] Captures both the FY 2023 Omnibus appropriation and the Disaster Relief Supplemental base.

DGE provides leadership for cross-Foundation efforts to support a diverse cadre of U.S. graduate students in STEM and STEM education, and to improve the nation's graduate education enterprise. DGE provides support to prepare tomorrow's STEM leaders, enhance the size, diversity, and effectiveness of the nation's STEM workforce, and contribute to a STEM-literate citizenry. The division pursues these goals through direct investment in individuals; by funding projects to develop and implement bold, new, and potentially transformative models for graduate education and training in high-priority interdisciplinary or convergent research areas; through basic research on STEM graduate education; by promoting collaborations between academic and government to produce highly trained professionals who contribute to effective governmental functioning, national defense, and US economic prosperity; and by contributing to the development of future STEM education researchers who will help to prepare students in the future. DGE's activities result in a body of research that expands the knowledge base and informs future efforts to improve STEM education by identifying successful models, practices, and approaches for the preparation of a STEM workforce ready to advance the frontiers of science and engineering.

## FY 2024 Summary

Research
- The ECR program supports fundamental research and capacity building initiatives. ECR is managed and funded across all EDU divisions. For a full description, see the EES Division narrative.

Education
- The NSF GRFP will be fully funded in EDU in FY 2024 at a total funding level of $380.32 million to support at least 2,500 new fellowships, with a cost of education allowance of $16,000, increased from a previous level of $12,000, and a stipend of $37,000 per fellow. The GRFP will continue to align awards with Administration priorities. In addition, DGE will continue to pursue efforts that will ultimately ensure that GRFP applicants and recipients reflect the diversity of the US population. The GRFP will further continue to improve the graduate education experience for fellows by promoting professional development opportunities and mentoring.
- The NRT program will continue to advance transformative efforts that combine interdisciplinary training with innovative professional development activities to educate the nation's diverse future STEM professionals. NRT awardees engage masters and doctoral students in convergent research

to address problems in areas of national need, including those highlighted in the CHIPS and Science Act of 2022. As part of their graduate experience, NRT students are prepared to assume leadership roles in emerging industries, which contributes to national economic prosperity and competitiveness. The monitoring and evaluation program for NRT will continue to collect data from NRT awardees to inform future efforts. The Innovations in Graduate Education (IGE), a part of the NRT program, will continue to support research into ways to improve graduate education and training. In addition, in alignment with the CHIPS and Science Act, IGE will invest in studies and/or research to examine the impacts and outcomes of the graduate education enterprise for different groups of students. IGE will also continue to support an Innovation Acceleration Hub that will disseminate the results of IGE projects to the nation's entire STEM graduate-education community.

- SFS funding will continue to improve the capacity of institutions to provide students with the high-quality curricula and experiences to ensure that students are well prepared to enter the cybersecurity workforce. SFS support allows institutions to conduct research to identify effective preparation strategies for a variety of cybersecurity professions. SFS will also invest in the cybersecurity education and workforce development component of NSF's Secure and Trustworthy Cyberspace: Education (SaTC:EDU), by supporting projects that span educational aspects of cybersecurity and closely related fields. SaTC:EDU places focus on K-12 cybersecurity education, and on preparing students from community colleges, veterans, and members of other groups that are underrepresented in the cybersecurity field for successful entry and retention in the workforce. Beginning in FY 2023 and continuing in FY 2024, SFS will investigate the Nation's need and academic capacity to support a new SFS program focused on AI.

- The STEM Education Postdoctoral Research Fellowship was piloted as an ARP funded activity in FY 2022. DGE formally established this program in FY 2023 to support postdoctoral awards designed to enhance the research knowledge, skills, and practices of recent doctoral graduates in STEM, STEM education, education, and related disciplines, with a goal of advancing their preparation to engage in fundamental and applied research in STEM education and contribute to the academic preparation of the nation's future experts in STEM education. Each postdoctoral scholar is engaged in research that contributes to the body of knowledge related to STEM education.

- Virtual Hubs to Support Key Transitions in Professional Growth – This activity will launch in FY 2024 to address factors that cause talented and diverse individuals to disengage with STEM. The hubs' activities will focus on critical transition periods, in particular the transition from undergraduate to graduate study. This transition is particularly challenging for first-generation and low-income students as well as those who lack access to successful role models who reflect a variety of intersectional identities. DGE will partner with DUE for this activity.

For more information about GRFP, SFS, and NRT, see the Major Investments in STEM Graduate Education narrative within the Cross Theme Topics section of the NSF-Wide Investments chapter.

**DIVISION OF RESEARCH ON LEARNING IN FORMAL AND INFORMAL SETTINGS (DRL)**

**DRL Funding**

(Dollars in Millions)

| | FY 2022 Actual[1] | FY 2023 Estimate Base | Disaster Relief Supplemental | | FY 2023 Estimate Total | FY 2024 Request | Change over FY 2023 Base Total[2] | |
|---|---|---|---|---|---|---|---|---|
| | | | Base | CHIPS and Science | | | Amount | Percent |
| **Total** | **$211.98** | **$223.02** | **-** | **$26.90** | **$249.92** | **$255.33** | **32.31** | **14.5%** |
| Research | 201.94 | 213.02 | - | 26.90 | 239.92 | 245.33 | 32.31 | 15.2% |
| Education | 10.04 | 10.00 | - | - | 10.00 | 10.00 | - | - |

[1]Does not capture funding provided by the American Rescue Plan supplemental appropriation.

[2]Captures both the FY 2023 Omnibus appropriation and the Disaster Relief Supplemental base.

DRL invests in foundational research to advance understanding about teaching and learning in STEM, across settings ranging from preK-12 schools to the Nation's science museums. These investments address learning in all STEM fields—including computer science and emerging fields such as data science, QIS, AI, and microelectronics. With a focus on equity, the DRL portfolio addresses the design, implementation, and study of learning environments, models, and online learning platforms intended to enable STEM learning for all students—particularly those who have been underrepresented in STEM—through both formal and informal activities across the STEM ecosystem. Advances in STEM learning ultimately support individuals who pursue STEM careers, as well as the Nation's broader workforce that will increasingly require STEM knowledge. DRL's programs inform and support lifelong access to high-quality STEM learning opportunities and promote widespread sharing of knowledge among education researchers and practitioners. In closing, DRL's efforts, in FY 2024, will focus on reaching the Missing Millions in STEM through new and existing STEM educational research and technological investments focusing on improving and enhancing teaching and learning in formal and informal settings.

**FY 2024 Summary**

Research
- AISL resources will support design, adaptation, implementation, and research on innovative modes of lifelong learning in informal environments such as science museums, community centers, and public media that have been economically challenged and serve vulnerable populations including rural and urban areas. Emphases will include equity in STEM, workforce development, adult and family learning of STEM, public participation in scientific research, remote/online learning, and climate education.
- DRK-12 focuses on research and development of resources, models, and tools to help U.S. preK-12 students learn STEM, including computer science and emerging fields such as data science, quantum information science, artificial intelligence, and microelectronics. Students benefit from a strong start in STEM education beginning in early childhood. DRK-12 supports research and development of resources for teachers and schools across diverse educational settings, including remote/online learning environments for rural and urban areas.
- The EDU Core Research (ECR) program supports fundamental research and capacity building

initiatives. ECR is managed and funded across all EDU divisions. For a full description, see the EES Division narrative.

- National Artificial Intelligence Research Institutes: EDU will support research on AI in relation to education and the workforce. The overall goal of the institutes is to improve learning and education, by incorporating AI into educational technology and anticipating how future workplaces will be changed by AI.
- Research on Innovative Technologies for Enhanced Learning will support advances in educational technology (e.g., AI, virtual and augmented reality, data analytics) and education research, with an emphasis on the most pressing needs of authentic educational environments and their teachers and learners. Such needs range from personalized students who are facing the "hurdle" of algebra to supporting teachers who are teaching about emerging technologies to making virtual and hybrid learning accessible for learners with disabilities to developing educational technologies that are cost-effective for budget-limited school districts and universities. Projects will explicitly address how educational technology is used to promote equity.

Education
- CSforAll addresses the national need to build computer science education opportunities and teacher preparation at the preK-12 level, as part of building the U.S. economy. CSforAll projects are expected to address equity issues in computer science education, including the participation of girls and women, and other underrepresented groups. In FY 2024, CSforAll will be supported at $10.0 million in EDU, with an additional $14.50 million in support from CISE.

## DIVISION OF UNDERGRADUATE EDUCATION (DUE)

**DUE Funding**
(Dollars in Millions)

| | FY 2022 Actual[1] | FY 2023 Estimate Base | Disaster Relief Supplemental | | FY 2023 Estimate Total | FY 2024 Request REVISED | Change over FY 2023 Base Total[2] | |
|---|---|---|---|---|---|---|---|---|
| | | | Base | CHIPS and Science | | | Amount | Percent |
| **Total** | **$275.60** | **$280.10** | **-** | **$35.10** | **$315.20** | **$351.35** | **$71.25** | **25.4%** |
| Research | 133.60 | 136.10 | - | 33.10 | 169.20 | 147.35 | 11.25 | 8.3% |
| Education | 142.00 | 144.00 | - | 2.00 | 146.00 | 204.00 | 60.00 | 41.7% |

[1]Does not capture funding provided by the American Rescue Plan supplemental appropriation.

[2]Captures both the FY 2023 Omnibus appropriation and the Disaster Relief Supplemental base.

Closely aligned with the agency's priority to reach and inspire the Missing Millions of STEM, DUE supports excellence in undergraduate STEM education for all students, including in MSIs and broad access institutions of higher learning like community colleges. It achieves this goal by funding projects that will strengthen STEM education at two- and four-year colleges and universities. These projects include efforts to design, develop, and implement high-quality educational experiences, as well as scientific research to understand the effectiveness and impacts of those experiences. DUE investments promote educational innovations across the full range of public and private U.S. institutions of higher education, which can help to increase retention and degree attainment by undergraduates. STEM graduates have more employment opportunities and career options, as well as greater lifetime earning potential. For example, innovative educational programs at community colleges enable students to enter careers in advanced technologies such as additive manufacturing, biotechnology, precision agriculture, nano-optics, and cybersecurity. DUE support also enables STEM majors to enter the K-12 teaching workforce in high-need school districts. In these ways, DUE investments broaden participation in the future STEM workforce and help the Nation meet STEM workforce needs. In FY 2024, DUE will continue a research emphasis, initiated in FY 2022, on the learning and teaching of STEM content at 2-year institutions, which often attract diverse populations of students at various points in their careers.

**FY 2024 Summary**

Research
- The ECR program supports fundamental research and capacity building initiatives. ECR is managed and funded across all EDU divisions. For a full description, see the EES Division narrative.
- IUSE: HSI funds enable the improvement of undergraduate education at HSIs and build the capacity for STEM education and STEM education research at HSIs that have previously received little or no funding from NSF. Outreach efforts will continue to seek to engage institutions that are new to NSF. This program is a partnership between DUE and EES.
- IUSE is a core NSF STEM education program that seeks to promote novel, creative, and transformative approaches to generating and using new knowledge about STEM teaching and learning to improve STEM education for undergraduate students. For more information, see the IUSE narrative in the Cross Theme Topics section of the NSF-Wide Investments chapter.

Education

- ATE will support understanding and development of effective preparation that will educate the skilled technical workforce, including technicians in advanced technological industries such as advanced manufacturing.
- Noyce will continue to invest in teacher preparation and support teacher leaders during completion of a teaching obligation in high-need school districts. Noyce funds also enable the study of effective K-12 STEM pre-service teacher preparation and the retention and development of in-service teachers in high-need school districts. Outreach efforts will continue to seek to engage institutions that are new to NSF and that are MSIs.
- The National STEM Teacher Corps initiative is designed to provide more opportunities for teacher leaders enabling them to boost their professional activities and provide opportunities for them to use their skills and expertise as a resource for improving K-12 science, technology, engineering, and mathematics (STEM) education. The National STEM Teacher Corps will create opportunities for the professional growth of teachers, with a focus on recruiting diverse STEM educators to advance equity based on race, ethnicity, sex, socioeconomic status, age, disability status, geography, and language ability. The National STEM Teacher Corps will recognize outstanding STEM teachers in our Nation's classrooms, rewards them for their accomplishments, elevates their public profile, and creates rewarding career paths to which all STEM teachers can aspire, both to prepare future STEM researchers and to create a scientifically literate public.

**H-1B NONIMMIGRANT PETITIONER FEES**                                             **$198,844,080**

In FY 2024, H-1B Nonimmigrant Petitioner Fees are projected to be $198.84 million.

**H-1B Nonimmigrant Petitioner Fees Funding**

(Dollars in Millions)

|  | FY 2022 Actual | FY 2023 Estimate Base | FY 2024 Request | Change over FY 2023 Base | |
|---|---|---|---|---|---|
|  |  |  |  | Amount | Percent |
| H-1B Nonimmigrant Petitioner Fees Funding | $278.48 | $192.54 | $198.84 | $6.30 | 3.3% |

Beginning in FY 1999, Title IV of the American Competitiveness and Workforce Improvement Act (ACWIA) of 1998 (P.L. 105-277) established an H-1B Nonimmigrant Petitioner Account in the general fund of the U.S. Treasury for fees collected for each petition for alien nonimmigrant status. The Congressional statute requires that a prescribed percentage of funds in the account be made available to NSF for scholarships to low-income STEM students; grants for mathematics, engineering, or science enrichment courses; and systemic reform activities. In FY 2005, Public Law 108-447 reauthorized H-1B funding. NSF was provided with 40 percent of the total H-1B receipts collected. Thirty percent of H-1B receipts (75 percent of the receipts that NSF receives) are to be used for a low-income scholarship program, Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM). Ten percent of receipts (25 percent of the receipts that NSF receives) are designated for support of private-public partnerships in K-12 education through Innovative Technology Experiences for Students and Teachers (ITEST).

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

The S-STEM program began in 1999 under P.L. 105-277. Originally named Computer Science, Engineering, and Mathematics Scholarships (CSEMS), it supported grants for scholarships to academically talented, low-income students with financial need pursuing associate, baccalaureate, or graduate degrees in computer science, computer technology, engineering, engineering technology, or mathematics. Grantee institutions awarded scholarships of up to $2,500 per year for two years to eligible students. The CSEMS activity continued under the American Competitiveness in the 21st Century Act (P.L. 106-313) with a prescribed percentage of H-1B receipts (22 percent) which totaled approximately 59.5 percent of the total H-1B funding for NSF. P.L. 106-313 also amended P.L. 105-277 by increasing the maximum scholarship duration to four years and the annual stipend to $3,125.

Under the Consolidated Appropriations Act, 2005 (P.L. 108-447), the prescribed percentage of H-1B receipts available for the low-income scholarship program was increased to 30 percent (approximately 75 percent of the total H-1B funding for NSF). Eligibility for the scholarships was expanded from the original fields of computer science, engineering, and mathematics to include "other technology and science programs designated by the Director." The maximum annual scholarship award amount was raised from $3,125 to $10,000. Language also was added allowing NSF to use up to 50 percent of funds "for undergraduate programs for curriculum development, professional and workforce development, and to advance technological education." As a result, the program was renamed in 2006 from CSEMS to S-STEM.

Section 10393 of the CHIPS and Science Act of 2022 (Public Law. 117-167) removed language that

limited the scholarship amount to $10,000 per year and lengthened the maximum scholarship duration to five years. Thus, the maximum individual scholarship amounts were increased from $10,000 to $15,000 per year for undergraduate students and from $10,000 to $20,000 per year for graduate students for maximum duration of five years.

- Low-income Scholarship Program: S-STEM. The S-STEM program provides institutions with funds for student scholarships to encourage and enable academically talented low-income U.S. students with unmet financial need to complete an associate, baccalaureate, or graduate degree in fields of science, technology, engineering, or mathematics. Earning these degrees enables the graduates to enter the STEM workforce or STEM graduate school. The program emphasizes the importance of recruiting students to STEM disciplines, mentoring them through degree completion, and partnering with employers to facilitate student career placement in the STEM workforce.

  Since its inception, the low-income scholarship program has received more than 8,550 proposals from all types of colleges and universities and has made more than 2,350 awards. In addition to scholarships, S-STEM awards also provide funding for student support activities such as faculty mentoring, academic support, curriculum development, leadership development, and internships. These high-impact activities are known to be effective for recruiting and retaining students in high-demand technology-rich fields through graduation and into employment. In FY 2024, in addition to the long-standing scholarship support, all S-STEM projects will continue to conduct activities to inform the accumulation of knowledge about interventions that affect associate or baccalaureate STEM degree attainment by academically talented, low-income U.S. students with unmet financial need. S-STEM projects report much higher retention and graduation rates among their scholarship students than among other STEM majors. As a result, research on S-STEM projects can help the Nation understand effective practices to support STEM degree attainment at scale. To this end, the S-STEM program, through the S-STEM NET solicitation[1], fosters a network of S-STEM stakeholders and further develops the infrastructure needed to generate and disseminate new knowledge, successful practices and effective design principles arising from NSF S-STEM projects nationwide. The program is able to synthesize current achievements and investigate evolving barriers to the success of this student population and disseminate the context and circumstances by which interventions and practices that support graduation of domestic low-income students pursuing careers in STEM are successful. About 90 awards are anticipated in FY 2024, with an emphasis on increasing involvement of community colleges, especially Hispanic-serving institutions. S-STEM will continue to be a partner in the INCLUDES Initiative. S-STEM programming and research also will align with NRT, with the goal of enhancing effective learning environments and pathways for students on the continuum from two-year to four-year to master's and doctoral degrees.

**Private-Public Partnerships in K-12**

The American Competitiveness in the 21st Century Act (P.L. 106-313) amended P.L. 105-277 and changed the way petitioner fees were to be expended. P.L. 106-313 directed the remaining 40.5 percent of the total H-1B funding for NSF (15 percent of H-1B receipts) toward K-12 activities involving private-public partnerships in a range of areas such as materials development, student externships, and mathematics and science teacher professional development. ITEST was developed as a

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[1] www.beta.nsf.gov/funding/opportunities/scholarships-stem-network-s-stem-net

partnership activity in K-12 to increase opportunities for students and teachers to learn, experience, and use information technologies within the context of STEM, including information technology (IT) courses. In FY 2005, P.L. 108-447 reduced the prescribed percentage of H-1B receipts available for private-public partnerships in K-12 to 10 percent (about 25 percent of the total H-1B funding for NSF).

- Private-Public Partnerships in K-12: ITEST. The ITEST program invests in K-12 activities that address the ongoing and growing need for STEM professionals and information technology workers in the U.S. and seeks solutions to help ensure the breadth and depth of the U.S. STEM workforce. ITEST funds activities for students and teachers that emphasize mathematics, science, and engineering and computer science careers, and emphasizes the importance of evaluation and research to understand the impact of such activities. The program supports the development, implementation, testing, and scale-up of models, STEM robotics projects, and research studies to improve the STEM workforce and build a student's capacity to participate in the STEM workforce. The solicitation places emphasis on capturing and establishing a reliable knowledge base about the dispositions toward and knowledge about STEM workforce skills in U.S. students.

  Since its inception, the ITEST program has received more than 4,630 grant proposals and made over 580 awards (including co-funded projects) that allow K-12 students and teachers to work closely with scientists, engineers, and other STEM professionals on extended research projects that promote awareness of STEM careers and interest in pursuing education pathways to those careers. The ITEST program encourages proposals relating to emerging industries such as artificial intelligence, data science, quantum information science, and microelectronics. Funded projects draw on a wide mix of community partnerships, including universities, industry, museums, science and technology centers, and school districts to identify the characteristics that attract a wide and diverse range of young people to STEM careers, especially those students historically underrepresented in those careers. ITEST will make 24-33 awards in FY 2024.

**H-1B Financial Activities from FY 2013 - FY 2022**

(Dollars in Millions)

| | FY 2013 | FY 2014 | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Receipts** | **$120.94** | **$132.49** | **$143.00** | **$138.80** | **$141.07** | **$155.99** | **$156.72** | **$153.03** | **$213.50** | **$189.94** |
| *Annual receipts due to NSF* | | | | | | | | | *$153.50* | |
| *DOL 2020 temporary rescission to NSF* | | | | | | | | | *$60.00* | |
| **Unobligated Balance start of year** | **$99.31** | **$108.31** | **$111.39** | **$116.02** | **$74.63** | **$96.86** | **$64.68** | **$77.47** | **$124.67** | **$141.77** |
| **Appropriation Previously unavailable (Sequestered)** | | **$5.10** | **$9.54** | **$7.30** | **$6.80** | **$9.73** | **$10.30** | **$9.72** | **$9.03** | **$8.75** |
| **Appropriation Currently unavailable (Sequestered)** | | **-$9.54** | **-$7.30** | **-$6.80** | **-$9.73** | **-$10.30** | **-$9.72** | **-$9.03** | **-$8.75** | **-$10.83** |
| **Rescission** | | | | | | | | | **-$60.00** | |
| Obligations incurred: | | | | | | | | | | |
| Scholarships in Science, Technology, Engineering, and Mathematics | 83.98 | 92.18 | 109.34 | 140.54 | 84.38 | 156.40 | 114.76 | 79.91 | 94.70 | 243.69 |
| Private-Public Partnership in K-12[1] | 31.51 | 37.23 | 29.83 | 44.35 | 35.11 | 35.86 | 34.24 | 34.87 | 51.81 | 34.79 |
| **Total Obligations** | **$115.49** | **$129.41** | **$139.17** | **$184.89** | **$119.49** | **$192.26** | **$149.00** | **$114.78** | **$146.51** | **$278.47** |
| Unallocated Recoveries | 3.55 | - | 4.95 | 1.60 | 3.58 | 4.66 | 4.49 | 8.26 | 5.30 | -0.01 |
| **Unobligated Balance end of year** | **$108.31** | **$111.39** | **$122.41** | **$72.03** | **$96.86** | **$64.68** | **$77.47** | **$124.67** | **$137.24** | **$51.15** |

[1] P.L. 108-447 directs that 10 percent of the H-1B Petitioner funds go toward K-12 activities involving private-public partnerships in a range of areas such as materials development, student externships, math and science teacher professional development, etc.

For information on carryover, see the Technical Information Chapter.