Welcome Message

Greetings NETL RWFI stakeholders,

This month's RWFI E-Note contains information about several new funding opportunities from the National Science Foundation (NSF) as well as a number of NSF funding opportunities that have a January 2019 deadline. In addition to these NSF funding opportunities, there is information in this month's E-note about several funding opportunities through the Department of Energy (the Minority Serving Institutions Partnerships program and the Nuclear Energy University Program). There are also several new entries on upcoming conferences on STEM and Workforce, including two conferences organized by the American Association of Community Colleges.

As we close out the year, the NETL RWFI would like to thank you for being a enthusiastic and important stakeholder and recognize the importance of your work in supporting the regions economic and workforce development activities.

Feel free to reach out to us at *NETL.RWFI@netl.doe.gov* if you have any suggestions for information to present in future E-notes.

— Sincerely, The NETL Regional Workforce Initiative Team

Workforce Funding Announcements

Advancement of Women in Academic Science and Engineering Careers (ADVANCE): Organizational Change for Equity in STEM Academic Professions

National Science Foundation, **Deadline: January 9, 2019**

The ADVANCE program is designed to foster gender equity through a focus on the identification and elimination of organizational barriers that impede the full participation and advancement of all women faculty in academic institutions. Organizational barriers that inhibit equity may exist in areas such as policy, practice, culture, and organizational climate. Despite significant increases in the proportion of women pursuing STEM doctoral degrees, women are significantly underrepresented as faculty, particularly in upper ranks, and in academic administrative positions, in almost all STEM fields. The problems of recruitment, retention, and advancement that are the causes of this underrepresentation vary by discipline and across groups of women faculty (e.g., by race/ethnicity, disability status, sexual orientation, foreign-born and foreign-trained status, and faculty appointment type).

FY 2019 Community College Initiative (CCI) Program

U.S. Department of State, **Deadline: January 11, 2019**

The Office of Global Educational Programs of the Bureau of Educational and Cultural Affairs (ECA) of the U.S. Department of State announces an open competition for the CCI Program. ECA is seeking proposal submissions for one cooperative agreement to design, implement, and oversee the CCI Program. The CCI Program provides international participants from underserved and underrepresented communities with an intensive academic-year long program at accredited U.S. community colleges, focused on building technical and professional skills while deepening participants' understanding of the United States, its people and values.

FY 2019 Study of the U.S. Institutes for Scholars

U.S. Department of State, **Deadline: January 11, 2019**

This study of the U.S. Branch of the Office of Academic Exchange Programs, ECA, invites proposal submissions from accredited U.S. post-secondary education institutions (community colleges, liberal arts colleges, public and private universities) and other U.S. public and private non-profit organizations meeting the provisions described in Internal Revenue Code section 26 USC 501(c)(3) on the design and implementation of four Studies of the U.S. Institutes for Scholars, pending the availability of FY 2019 funds.

Research on the Science and Technology Enterprise: Statistics and Surveys — R&D, U.S. Science and Technology (S&T) Competitiveness, STEM Education, S&T Workforce

National Science Foundation, **Deadline: January 15, 2019**

The National Center for Science and Engineering Statistics (NCSES) of the NSF is one of the thirteen principal federal statistical agencies within the United States. It is responsible for the collection, acquisition, analysis, reporting, and dissemination of objective, statistical data related to the science and engineering enterprise in the United States and other nations that is relevant and useful to practitioners, researchers, policymakers, and the public. NCSES uses this information to prepare statistical data reports as well as analytical reports, including the National Science Board's biennial report; Science and Engineering Indicators; and Women, Minorities, and Persons with Disabilities

in Science and Engineering. The Center would like to enhance its efforts to support analytic and methodological research in support of its surveys, and to engage in the education and training of researchers in the use of large-scale nationally representative datasets. NCSES welcomes efforts by the research community to use NCSES data for research on the science and technology enterprise, to develop improved survey methodologies for NCSES surveys, to create and improve indicators of S&T activities and resources and strengthen methodologies to analyze and disseminate S&T statistical data. To that end, NCSES invites proposals for individual or multi-investigator research projects, doctoral dissertation improvement awards, workshops, experimental research, survey research, and data collection and dissemination projects under its program for Research on the Science and Technology Enterprise: Statistics and Surveys.

Accelerating Discovery: Educating the Future STEM Workforce

National Science Foundation, **Deadline: January 16, 2019**

Proposers are encouraged to include approaches that have the potential to increase and diversify participation in STEM. All proposals should contribute to one or more of the six research Big Ideas. EHR is particularly interested in supporting innovative education research and development in two Big Ideas: *The Future of Work at the Human-Technology Frontier* and *Harnessing the Data Revolution for 21st Century Science and Engineering*. Projects of interest include innovative uses of technology and big data to understand learning, educational approaches that prepare tomorrow's innovators to use technology and big data to understand the natural world, effects of advances in intelligent agents on STEM teaching and learning, and evaluation of disruptive educational interventions on long-term student outcomes. Outcomes of these projects can enable the Nation to better prepare its scientific and technical workforce for the future, use technological innovations effectively for education, and advance the frontiers of science. Proposals should describe projects that build on available evidence and theory, and will generate evidence and build knowledge, while contributing to the education of the future STEM professionals.

NSF Research Traineeship (NRT) Program

National Science Foundation, **Deadline: February 6, 2019**

The NRT program is designed to encourage the development and implementation of bold, new, and potentially transformative models for STEM graduate education training. The NRT program seeks proposals that explore ways for graduate students in research-based master's and doctoral degree programs to develop the skills, knowledge, and competencies needed to pursue a range of STEM careers. The program is dedicated to effective training of STEM graduate students in high priority interdisciplinary or convergent research areas using a comprehensive traineeship model that is innovative, evidence-based, and aligned with changing workforce and research needs.

Training-based Workforce Development for Advanced Cyberinfrastructure

National Science Foundation, **Deadline: February 6, 2019**

This program seeks to prepare, nurture, and grow the national scientific research workforce for creating, utilizing, and supporting advanced cyberinfrastructure (CI) to enable and potentially transform fundamental science and engineering research and contribute to the Nation's overall economic competitiveness and security. The goals of this solicitation are to 1) ensure broad adoption of CI tools, methods, and resources by the research community in order to catalyze major research advances and to enhance researchers' abilities to lead the development of new CI and 2) integrate core literacy and discipline-appropriate advanced skills in advanced CI as well as computational and data-driven science and engineering into the Nation's educational curriculum/instructional material fabric spanning undergraduate and graduate courses for advancing fundamental research.

Fiscal Year 2019 Consolidated Innovative Nuclear Research

Department of Energy, **Deadline: February 12, 2019**

This FOA addresses the competitive portion of NE's R&D portfolio as executed through the Nuclear Energy University Program (NEUP), Nuclear Energy Enabling Technologies (NEET) Crosscutting Technology Development (CTD), and the Nuclear Science User Facilities (NSUF). NEUP utilizes up to 20% of funds appropriated to NE's R&D program for university-based infrastructure support and R&D in key NE program-related areas: Fuel Cycle Research and Development (FC R&D), Reactor Concepts Research, Development and Demonstration (RC RD&D), and Nuclear Energy Advanced Modeling and Simulation. NEET CTD supports national laboratory- and university-led crosscutting research. By establishing the NSUF in 2007, DOE-NE opened the world of material test reactors, beam lines, and post-irradiation examination facilities to researchers from U.S. universities, industry and national laboratories by granting no-cost access to world-class nuclear research facilities.

Minority Serving Institutions Partnership Program

Department of Energy, **Deadline: February 15, 2019**

The Minority Serving Institutions Partnership Program (MSIPP) within the Department of Energy's (DOE), National Nuclear Security Administration (NNSA) Office of Science, Academic Alliances and Partnerships subprogram funds academic programs to develop NNSA's next-generation technical workforce. NNSA funds scientific academic programs to develop the next generation of highly trained technical workers able to support its core mission and to ensure there is a strong community of technical peers, external to the NNSA national laboratories, capable of providing peer review and scientific competition to strengthen the basic fields of research relevant to the NNSA. MSIPP aligns investments in university capacity and workforce development with DOE/NNSA mission areas to develop the needed skills and talent for DOE/NNSA's enduring technical workforce at the laboratories and production plants, and to enhance research and education at under-represented colleges and universities.

National Robotics Initiative 2.0: Ubiquitous Collaborative Robot

National Science Foundation, **Deadline: February 19, 2019**

The NRI-2.0 program builds upon the original National Robotics Initiative (NRI) program to support fundamental research in the United States that will accelerate the development and use of collaborative robots (co-robots) that work beside or cooperatively with people. The focus of the NRI-2.0 program is on ubiquity, which in this context means seamless integration of co-robots to assist humans in every aspect of life. The program supports four main research thrusts that are envisioned to advance the goal of ubiquitous co-robots: scalability, customizability, lowering barriers to entry, and societal impact. Topics addressing scalability include how robots can collaborate effectively with multiple humans or other robots; how robots can perceive, plan, act, and learn in uncertain, real-world environments, especially in a distributed fashion; and how to facilitate large-scale, safe, robust, and reliable operation of robots in complex environments.

NETL News

Director's Corner — NETL At Year's End: Accomplishments, A Bright Future, and Energized New Leadership

Odd traditions are observed at this time of year all over the world to mark the end of the year and to express good wishes for the beginning of a new one. For example, In Denmark, they save all their unused dishes and plates and then shatter them against the doors of friends and family as an expression of best wishes. In Ecuador, they celebrate the New Year by burning paper filled scarecrows at midnight. There's a village in Peru where residents engage in a mass fist fight to settle differences and then start the year off with a clean slate. On the other hand, the tradition at NETL is for the director to offer a few thoughts about the previous year's success and provide a look forward.

Winter Edition of NETL Edge is Now Available

NETL presents the latest edition of our publication that showcases the Lab's research on emerging energy technologies. NETL Edge shares the latest developments our talented scientists and engineers are advancing to use our nation's energy resources efficiently and safely to bolster American's energy independence. Check out the winter edition to learn more about our research to recharge America's existing coal-fired power plants, a new rare earth extraction facility created by NETL and West Virginia University, a recently completed supercomputer upgrade and more.

Upcoming Workforce Conferences, Meetings, and Summits

National Council for Science and the Environment (NCSE) 2019 Annual Meeting: Sustainable Infrastructure and Resilience

Washington, DC, **January 7–10, 2019**

Each year, the NCSE Annual Conference brings together over 700 educators, researchers, students, policy-makers, government officials, business leaders and representatives from civil society. The event is a unique opportunity to gain insight into the latest trends and practices in environmental science and decision-making as well as to network with peers, make new connections, and meet today's and tomorrow's environmental leaders. A large part of the NCSE Annual Conference is the opportunities for learning. NCSE organized plenaries and keynotes cover today's pressing issues. More than 35 concurrent sessions will be presented, covering a variety of topics.

STEM Conference 2019: Delivering next generation teaching in STEM

Millennium Point, Birmingham, **January 30–31, 2019**

The Annual STEM Conference returns at the end of January 2019 after a fantastic event in 2018 which welcomed more than 200 speakers and delegates from across higher education STEM disciplines. Student success in higher education depends on a careful balance of factors including engaged learning, environments conducive to learning and the desire to develop in students the knowledge, skills, behaviors and attributes expected of graduates. The conference is the ideal opportunity to collaborate and learn from other higher education professionals within STEM disciplines and to share best practice. This two-day conference, featuring a mix of peer-led workshops, presentations and respected keynotes will provide a forum for each of the individual STEM disciplines as well as opportunities to learn from cross-disciplinary practice.

American Association of Community Colleges (AACC) John E. Roueche Future Leaders Institute at the Workforce Development Institute (WDI)

San Diego, CA, Sheraton San Diego Hotel and Marina, **January 29–30, 2019**

As part of AACC's Leadership Suite, Roueche Future Leaders Institute at AACC's WDI is designed for workforce and economic development and continuing education professionals who want to advance their careers. This 1 ½-day seminar offers participants the opportunity to engage in dialogue with experienced community college leaders and experts in workforce training

American Association of Community Colleges Workforce Development Institute 2019

San Diego, CA, Sheraton San Diego Hotel and Marina, **January 30–February 2, 2019**

Community college workforce and economic development efforts are key to the economic well-being of the United States. Our work ensures that we will have a sustainable, inclusive and forward-thinking workforce. Key to this work are our collaborations with foundation, industry, and federal partners. Please join us at AACC's Workforce Development Institute 2019 "Skill Up, Step Up" as we highlight promising practices, explore new opportunities, and celebrate all of the ways in which community colleges skill up, and step up.

Reports and Resources
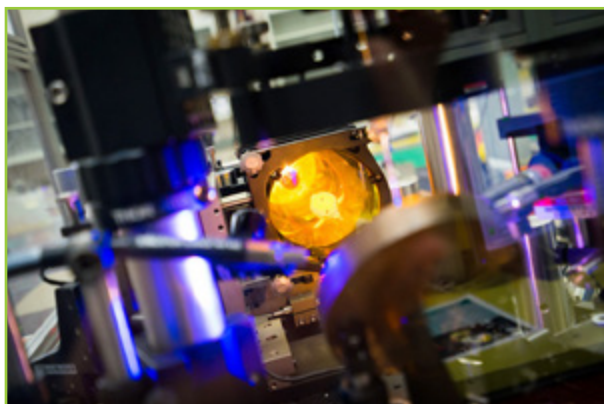
December 2018 LinkedIn Workforce Report

LinkedIn

The LinkedIn Workforce Report is a monthly report on employment trends in the U.S. workforce. It is divided into two sections: The first national section that provides insights into hiring, skills gaps, and migration trends across the country, and the second is a city section that provides insights into localized employment trends in 20 of the largest U.S. metro areas.

- **Skills Gaps | Low unemployment leads to significant skills shortages** - Since November 2017, the national U.S. labor market has experienced historically low unemployment rates, which translates to growing national skills shortages and shrinking national skills surpluses, making it more difficult for employers to find workers with the skills they need. Demand for Business Management, Oral Communication, Leadership, and Development Tools skills has increased significantly since November 2017.

Employability Skills Brief: A Review of the Skills and Mindsets that Drive Success in the Modern Workforce and Resources to Help Develop Them

STEMconnector.com

Employability skills and mindsets are personal attributes that indicate a high level of cognitive and personal development and are broadly applicable across job titles and industries. Creating and maintaining an adaptable workforce, where employees are prepared for changing jobs and jobs we cannot predict yet, requires young people to learn skills and mindsets beyond the

technical aspects of any particular job or industry. Establishing a shared language and greater collaboration around developing these skills and mindsets is critical to reach the goals of the postsecondary sector (the institutions educating future hires) and employers (the organizations hiring those students).

Digitalization and the American workforce

Brookings Institute

In recent decades, the diffusion of digital technology into nearly every business and workplace, also known as "digitalization," has been remaking the U.S. economy and the world of work. The "digitalization of everything" has at once increased the potential of individuals, firms, and society while also contributing to a series of troublesome impacts and inequalities, such as worker pay disparities across many demographics, and the divergence of metropolitan economic outcomes. In light of that, this report presents a detailed analysis of changes in the digital content of 545 occupations covering 90% of the U.S. workforce in all industries since 2001. The analysis categorizes U.S. occupations into jobs that require high, medium or low digital skills and tracks the impacts of rapid change.

DOE STEM Rising

Hot topics for cold winter days: Science on Saturday begins Jan. 12. Live Stream Available

The Princeton Plasma Physics Laboratory's 2019 Ronald E. Hatcher Science on Saturday Lecture Series gets started Jan. 12 with a multitude of lectures on hot science topics that will warm the hearts and stimulate the minds of science fans of all ages. The 10-week program at the DOE national laboratory gets started with a talk that combines the unlikely topics of heavy metal and quantum physics. Philip Moriarty, professor of physics at the University of Nottingham School of Physics and Astronomy in England, will discuss "When the Uncertainty Principle Goes to 11…. or How to Explain Quantum Physics with Heavy Metal." Moriarty is the author of a book by the same name. A full schedule is available *here*. If you are not able to make it to the lecture, you can watch it live *here*.

Robots and remote systems to the rescue

Until this past summer, the closest Syed Saahir Ahmed, a senior at Penn State University, got to working with robots was through a student club. There, he designed simple machines to perform elementary tasks, such as navigating through a maze. But the aspiring electrical engineer had always hoped to work on more complex machines, and thanks to the DOE's Science Undergraduate Laboratory Internship (SULI) program, he got his wish. Ahmed works with three other college seniors — Anibal Morales, Matthew Krebs and Kevin Wandke, also a SULI intern — as a robotics intern at DOE's Argonne National Laboratory. The experience gives him and his peers a deep dive into the field of robotics and its wide-ranging applications in manufacturing.

ABOUT NETL

NETL, owned and operated by DOE, is one of the Department's 17 National Laboratories. NETL supports DOE's mission to advance the national, economic, and energy security of the United States.

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