Faculty Development Grant Awards

Institution	Amount	Title
University of Tennessee	$450,000	Faculty Development Program in Nuclear Data at the University of Tennessee
Texas A&M University	$450,000	Texas A&M Nuclear Engineering Faculty Development Program
University of Wisconsin - Madison	$450,000	University of Wisconsin-Madison Faculty Development Program in Nuclear Engineering
Purdue University	$450,000	Purdue University Health Physics Faculty Development Plan
University of Pittsburgh	$450,000	Pitt Nuclear Engineering Faculty Growth and Development
University of Florida	$450,000	2020 NRC Nuclear Engineering Faculty Development Program
Worcester Polytechnic Institute	$450,000	WPI Nuclear Science and Engineering (NSE) Faculty Development Program
University of Massachusetts Lowell	$450,000	Faculty Development Program for Radiochemistry and Radiological Health Physics at the University of Massachusetts Lowell
Virginia Commonwealth University	$450,000	Virginia Commonwealth University Faculty Development Program in Advanced non-LWR Nuclear Reactor Design and Thermal Hydraulics
University of Texas at San Antonio	$450,000	UTSA Faculty Development in Cybersecurity of Digital I&C in Nuclear Power Plants Research and Education
University of Missouri – Columbia	$449,954	University of Missouri-Columbia Radiochemistry Faculty Development Program

Faculty Development Program in Nuclear Data at the University of Tennessee

Executive Summary:

The University of Tennessee Nuclear Engineering (UTNE) Department has a well-established and successful relationship with the US Nuclear Regulatory Commission's (US NRC's) Nuclear Education Grant Program that dates back to its inception. This synergistic relationship has supported several junior faculty members at UTK, of which 7 have already successfully acquired the rank of tenured Associate Professor, with 3 on track for tenure. The impact of the US NRC's grant program upon our Nuclear Engineering Department is evident and will benefit the nation, as these 10 individuals represent educators and researchers who will play key roles in the development of our future nuclear workforce and thus supporting the design, construction, operation, and regulation of nuclear facilities and the safe handling of nuclear materials for years to come. The objective of this program is to develop our newest faculty member to achieve excellence in research, teaching, and service, with an emphasis on NRC relevant topic of Fuels and Neutronics, or more specifically, nuclear data.

Principal Investigator: J. Wesley Hines, jhines2@utk.edu

Texas A&M Nuclear Engineering Faculty Development Program

Executive Summary:

The Department of Nuclear Engineering at Texas A&M University (TAMU) is proposing to create a Nuclear Engineering Faculty Development program to supplement the startup of a newly hired junior faculty to create a strong foundation in research, teaching, and service. The faculty development grant will be used to support a tenure-track faculty member to enhance the career path as a professor, researcher, and mentor in the department while promoting educational and research goals. The faculty development grant will aid in the retention of the faculty member by providing resources for new course development, research proposal support, professional society meetings participation, summer salary support, scientific publication, graduate student support, equipment, and other scholarly needs. The program will also provide the new faculty with the momentum to propel a research career in strategic directions that align with exciting academic opportunities in nuclear engineering. Finally, this program will enrich the new faculty's research portfolio to help attract a plurality of high-caliber graduate students. The overall intent of the proposed program is to assist in the development and retention of new faculty towards a sustainable, long-term academic career, and to support the envisioned workforce demands in the nuclear sector in nuclear engineering, particularly those linked more closely to the research experience nurtured in the next generation of nuclear professionals at TAMU.

Principal Investigator: Michael Nastasi, mikenastasi@tamu.edu

University of Wisconsin-Madison Faculty Development Program in Nuclear Engineering

Executive Summary:

The proposed faculty development program consists of both research and curriculum development support, paired with a mentoring program for this junior nuclear engineering faculty member in the nuclear engineering program in the Department of Engineering Physics. The development of a robust faculty research and teaching program requires several elements that will be supported by this proposal. These elements include: 1) faculty summer salary support, 2) support for graduate students or post-doctoral fellows, 3) travel support for faculty and students to participate in technical symposia and research program development, and 4) materials/supplies for unique laboratory capability and computational capability. Our nuclear engineering program at the University of Wisconsin-Madison (UW-Madison) also augments faculty support with operation of common research equipment and/or access to key UW-Madison user facilities, such as the UW Nuclear Reactor Lab, the Extreme Environments Lab, the Materials Science Center and the Center for High-Throughput Computing. In our program, the mentor committee consisting of the Department Chair and key nuclear engineering faculty will work together with the assistant professor to assist them in their growth as a valuable member of the faculty and UW-Madison academic community. The faculty mentoring committee provides formative feedback to the assistant professor on their strengths and weaknesses in teaching, research and service and will suggest strategies and techniques for improvement if needed. It will also assist them in discovering opportunities and developing strategies for their growing research program. Finally, the faculty mentoring committee will serve as an advocate for the assistant professor to promote visibility nationally and internationally on their work as a nuclear engineering researcher and scholar.

Principal Investigator: Paul Wilson, paul.wilson@wisc.edu

Purdue University Health Physics Faculty Development Plan

Executive Summary:

The main objective of the proposed program is to enable the creation of a new faculty position in Health Physics by leveraging US NRC and Purdue University funds. The new faculty member will be chosen from the best qualified individuals, from a diverse applicant pool, with established expertise in health physics and closely related university programs, industry, national laboratories, and regulatory agencies. Preference will be placed on applicants that have expertise in one of the US NRC program objective challenge areas. Once selected, the new faculty member's professional growth will be enhanced through a close working relationship with government, research, or industry partners. Summer and graduate student support will help the new faculty member launch their independent research program. To assist with the new faculty member's development and maturation, a Mentoring Committee will advise in all areas of academic life at the beginning of their academic career. The establishment of a Management Committee and an Effectiveness Evaluation Plan will quantitatively assess the faculty member selected for this program as well as the program itself. The Purdue School of Health Sciences believes that this program will help develop a successful faculty member that can become part of and ultimately train a workforce capable of supporting the design, construction, operation, and regulation of nuclear facilities and the safe handling of nuclear and radioactive materials.

Principal Investigator: Jason Harris, jtharris@purdue.edu

Pitt Nuclear Engineering Faculty Growth and Development

Executive Summary:

This program is designed to help develop Dr. Nikhil Bajaj, who was hired in August of 2019 as a tenure-track Assistant Professor, to establish research in an area identified by NRC in the FOA: advanced sensors and artificial intelligence for reactor applications, specifically, high temperature, high-reliability sensor designs using machine learning and advanced communication technology. Dr. Bajaj will be mentored to develop a nationally recognized nuclear research program and be integrated into the nuclear science and engineering faculty as part of the overall effort to grow the nuclear program at the University of Pittsburgh. This faculty development grant will be used support Dr. Bajaj by providing him with: (1) guidance and mentoring by senior nuclear faculty members, (2) summer salary support, (3) graduate student support, and (4) travel funds for collaboration with national laboratories and participation in nuclear professional society meetings. Cost share is provided by the department, including teaching and research support in salary and student tuition. This project will strengthen and expand nuclear engineering research and education of the Stephen R. Tritch Nuclear Engineering Program at the University of Pittsburgh.

Principal Investigator: Heng Ban, heng.ban@pitt.edu

2020 NRC Nuclear Engineering Faculty Development Program

Executive Summary:

The objective of the 2020 NRC Nuclear Engineering Faculty Development Program at the University of Florida is to produce a new high-quality faculty member that will produce new research, education, and train new students that will benefit the nuclear industry. The goal of this proposal is to augment the startup package for a new junior faculty member in the Nuclear Engineering Program. The Faculty Development Program will be administered and managed by Director of the Nuclear Engineering Program. He will coordinate the different functions for the program, including providing mentoring of the new faculty member, assist in management of the research funds, and promote the new faculty member through an aggressive marketing campaign to attract additional research funding for the new faculty member. The PI will monitor the progress of the new faculty member to ensure they are progressing towards tenure and promotion, and will prepare and submit an annual report and a final report to the NRC Project Manager electronically detailing the progress of the new faculty member.

Principal Investigator: Andreas Enqvist, enqvist@ufl.edu

WPI Nuclear Science and Engineering (NSE) Faculty Development Program

Executive Summary:

The goal of this proposal is to provide an enhanced program of support and mentorship to a new Nuclear Science tenure-track faculty hire at WPI. This proposed program will be performed in addition to our regular support program and will target the professional areas required to obtain tenure at WPI, including the candidate's: (a) program of scholarship (b) teaching effectiveness, (c) proposal preparation, (d) preparation of research publications and presentations, and € course development and renovation. By achieving our goal, we will help ensure both the quality and quantity of our candidate's scholarship and teaching programs to help our candidate develop stronger qualifications for tenure at WPI. It also will enrich WPI's Nuclear Science and Engineering (NSE) program, help justify future NSE hires, and enhance the long-term stability of our NSE program.

Principal Investigator: David C. Medich, dcmedich@wpi.edu

Faculty Development Program for Radiochemistry and Radiological Health Physics at the University of Massachusetts Lowell

Executive Summary:

A Faculty Development Program is proposed for the University of Massachusetts Lowell to support its Radiological Sciences Program and other nuclear science and engineering programs as part of a radiochemistry initiative. This initiative will lead to increased research and funding opportunities, increased collaborations with related disciplines at UML and other institutions, an increase in undergraduate and graduate student populations, and will increase the number of degree recipients entering the nuclear workforce with much-needed expertise in radiochemistry. To support this initiative, UML recently created and filled a tenure-track faculty position in Radiochemistry and Radiological Health Physics and has allocated almost $3M for laboratory renovations and infrastructure upgrades dedicated for a new radiochemistry lab. The university also has committed to full cost-sharing for the proposed Faculty Development Program.

Principal Investigator: Mark Tries, Mark_Tries@uml.edu

Virginia Commonwealth University Faculty Development Program in Advanced non-LWR Nuclear Reactor Design and Thermal Hydraulics

Executive Summary:

The objective of the Virginia Commonwealth University Faculty Development Program is to retain and successfully mentor Dr. Lane Carasik who is focused in advanced non-LWR reactor design and nuclear thermal hydraulics. We intend for this program to facilitate their continued success in research, teaching and service at VCU. The program seeks to continuously enhance the qualifications and expertise of Dr. Carasik so that they can pursue innovative and multidisciplinary research and develop new course offerings in nuclear engineering currently unavailable in VCU's curriculum. VCU offers an ABET accredited BS in Mechanical Engineering with a separately ABET accredited Nuclear Engineering Concentration, and MS and PhD degrees in Mechanical and Nuclear Engineering. VCU is the only university in Virginia offering undergraduate (BS) and graduate degrees (MS, PhD) in nuclear engineering. ~50 students are enrolled in the undergraduate nuclear engineering major concentration and ~105 graduate students are enrolled in the mechanical and nuclear engineering MS and PhD programs. VCU's nuclear engineering program celebrated 10 years in fall 2017, and while much has been achieved since inception, faculty recruiting and retention is a particular challenge. This is due having to compete with the more established nuclear engineering programs. The NRC Faculty Development support has allowed us to attract and support a group of outstanding nuclear engineering faculty who are already making a positive impact on the students in our degree programs. NRC support is vital for new nuclear engineering programs such as VCU's to help attract and retain top faculty who then educate the next generation of nuclear engineering professionals.

Principal Investigator: Gary Tepper, gctepper@vcu.edu

UTSA Faculty Development in Cybersecurity of Digital I&C in Nuclear Power Plants Research and Education

Executive Summary:

The overarching goal of this faculty development program is to develop and establish a state-of-the-art nuclear power plant (NPP) cybersecurity line of research that will enhance the innovation capacities within the College of Engineering (COE) at UTSA. To achieve its goal the program will draw upon the expertise and capabilities of a recently hired assistant professor in the Department of Electrical and Computer Engineering. The research activities will comprise of a multidisciplinary portfolio spanning the areas of digital instrumentation and controls, artificial intelligence, data analytics, hardware-in-the-loop simulations, nuclear plant modeling and cyber-physical security. Furthermore, through a combination of research and educational activities, the program will facilitate enabling technologies to detect, identify, characterize and prevent strategic surprises pertained to cybersecurity of digital I&C in nuclear power plants, while it will establish and sustain a pipeline of workforce with the underlying principles of cybersecurity. The proposed program will address the primary NRC objective of developing a faculty in nuclear engineering by supporting a junior faculty specializing in I&C cybersecurity for NPP. In addition, it will allow the retention of a high-quality assistant professor in the academic field by providing him with a set of resources to expand his research and teaching portfolio. Lastly, it will enrich UTSA capabilities, support new and continue research, and will open a new career path for UTSA engineering students.

Principal Investigator: David Akopian, david.akopian@utsa.edu

University of Missouri-Columbia Radiochemistry Faculty Development Program

Executive Summary:

The objective of this proposal is to provide funding for professional development for a recent radiochemistry hire, who was recently hired as Assistant Professor in the MU Department of Chemistry, and a joint appointment at the University of Missouri Research Reactor (MURR). The University of Missouri has a long history at the forefront of nuclear and radiochemistry. We seek to continue this tradition as part of our succession plan to replace a radiochemistry faculty member who has recently retired and another who has moved into full-time administrative role. The University's long-range plan is to build on its strengths for which radiochemistry is a high priority. Matching funds have been offered to demonstrate the University's commitment to this endeavor. The benefits of adding this position are manifold. First, the University of Missouri continues its excellence in offering the highest quality of research and education in nuclear and radiochemistry to both undergraduate and graduate students. Second, the succession plan to replace faculty members provides the opportunity for the new faculty hire to gain professional development experience to enhance their expertise and contributions. Finally, the facilities at the University of Missouri -- in tandem with those at the MURR -- are unparalleled with any nuclear and radiochemistry program in the United States as we boast the largest research reactor as well as a cyclotron for complimenting nearly all research areas.

Principal Investigator: Justin R. Walensky, WalenskyJ@missouri.edu