FY 2015 Fellowship Grant Awards

Institution	Amount	Title
Oregon State University	$400,000	Oregon State University Nuclear Engineering and Radiation Health Physics Fellowship Program
University of Massachusetts Lowell	$400,000	Fellowship in Nuclear Engineering and Health Physics at UML
University of Missouri Columbia	$400,000	MU Graduate Fellowship Program in Radiochemistry
Pennsylvania State University	$400,000	The Pennsylvania State University Nuclear Education Fellowship Program
Florida International University	$283,385	FIU Nuclear Research Fellowships – Growing the Opportunities
University of Michigan	$400,000	Nuclear Engineering Fellowship Program
University of Wisconsin Madison	$399,993	Fellowship Education Grant, Fiscal Year 2015
University of Utah	$376,830	Fellowship Awards for the University of Utah Nuclear Engineering Doctoral Graduates
University of Tennessee	$400,000	Development of a Sustainable Bridge for Entering Nuclear Engineering Graduate Students at the University of Tennessee
Colorado School of Mines	$400,000	Colorado School of Mines Nuclear Science and Engineering Fellowship Program
University of California Berkeley	$400,000	Training the Next Generation of Nuclear Engineers: Graduate Fellowships at the University of California, Berkeley
Louisiana State University	$400,000	LSU Fellowships Program in Health Physics
University of South Carolina	$398,956	University of South Carolina Excellence in Nuclear Engineering Fellowship Program
University of Nevada, Las Vegas	$396,935	UNLV Nuclear Science and Engineering Fellowship Program
Rensselaer Polytechnic Institute	$400,000	Fueling Thriving Growth of Nuclear Engineering Graduate Program at Rensselaer Polytechnic Institute

University of Illinois	$400,000	University of Illinois at Urbana-Champaign Nuclear Engineering Education Fellowship Program

Oregon State University Nuclear Engineering and Radiation Health Physics Fellowship Program

Executive Summary:

The Department of Nuclear Engineering and Radiation Health Physics (NERHP) at Oregon State University (OSU) is submitting this proposal to describe its methodology to attract and retain highly-qualified graduate students within the disciplines that center on nuclear science and engineering. The program will be administered by Dr. Haori Yang, an Assistant Professor of nuclear engineering in the NERHP. The program will provide eight graduate students with tuition assistance and monthly stipend during their pursuit of a graduate degree in a nuclear related discipline (nuclear engineering or radiation health physics). The program will focus on recruiting highly deserving students into the department and will incorporate metrics to track student performance and evaluate program effectiveness. The tenured and tenure-track faculty, as a part of the annual admission process, will jointly select recipients of the OSU Nuclear Fellowship. The total requested funds from the Nuclear Regulatory Commission for the implementation of the Oregon State University Fellowship Program is $400,000 over a four-year period.

Principal Investigator: Haori Yang, haori.yang@oregonstate.edu

Fellowship in Nuclear Engineering and Health Physics at UML

Executive Summary:

The University of Massachusetts Lowell (UML) Graduate Fellowship Program in Nuclear Engineering (NE) and Health Physics (officially referred to as Radiation Science (RS)) will be used to attract highly qualified and motivated graduate students specifically for careers within the nuclear industry to support the design, construction, operation, and regulation of nuclear facilities and the safe handling of nuclear materials. Support for this application will allow UML to continue its successful Graduate Fellowship Program, originally funded by the NRC in 2010 and ended in Fall 2014. This grant provided fellowships for 18 graduate students in the NE and RS programs. The primary target audience for fellowship consideration will continue to be prospective and entering graduate students in the College of Engineering and in the Sciences Division of the College of Arts and Sciences. The programs of study in these two colleges that are eligible for fellowships are the Nuclear Engineering Program and the Radiological Sciences Program. The nuclear programs in the last 5 years have gone through substantial rejuvenation: (1) hired new faculty - 3 in engineering and 2 in physics in last 5 years; (2) redesigned the curriculum and (3) upgrade our nuclear research facilities – advance computing lab, detector lab. Specifically, with the addition of new faculty the need for recruiting high caliber students has grown considerably. The NRC fellowship recipient will have an opportunity to work on research projects with established and new faculty members (total of 5 new in last 5 years) in the areas of nuclear reactor safety, radiation dosimetry, radiation detection, radiation shielding, reactor engineering, nuclear security, reactor physics and safeguards. The combination of active research projects and the NRC fellowship grant will provide US students an opportunity to secure advance degrees in nuclear fields and replenish the retiring nuclear workforce. The requested funding is $100,000 per year for four years. This funding will support 4 fellowships per year at $25,000 award per fellowship.

Principal Investigator: Sukesh Aghara, Sukesh_Aghara@uml.edu

MU Graduate Fellowship Program in Radiochemistry

Executive Summary:

This proposal requests $400,000 from the NRC to establish the MU Graduate Fellowship Program in Radiochemistry to help recruit and retain highly qualified undergraduate students in the U.S. into doctoral degree programs in radiochemistry. The field of radiochemistry has been identified by the US Department of Energy's Office of Nuclear Energy in the FY16 Congressional Budget request as an area of expertise that is "mission-specific / mission-critical" in relation to the workforce needs of the country's nuclear industry. MU's Radiochemistry program is widely regarded as one of the top three academic programs in the country. A unique aspect of our recruiting efforts will focus on the participating faculty's involvement in national programs to develop undergraduate interests and capabilities in nuclear chemistry and radiochemistry (i.e., the ACS Summer School in Nuclear and Radiochemistry, offered annually in collaboration with two host sites – Brookhaven National Laboratory and San Jose State University) and our collaborations in the approximately biannual hosting of the DOE/DNDO/DTRA Nuclear Forensics Summer Schools. The requested NRC funding will allow MU to recruit and retain doctoral students to study with our Radiochemistry faculty, complemented by the world-class analytic and irradiation facilities available at the MU Research Reactor (MURR) for student / faculty investigations.

Principal Investigator: J. David Robertson, RobertsonJo@missouri.edu

The Pennsylvania State University Nuclear Education Fellowship Program

Executive Summary:

The Pennsylvania State University's Department of Mechanical and Nuclear Engineering is committed to maintaining its rich history by strengthening its prominent nuclear engineering program. This proposal describes a plan to create graduate fellowships in nuclear engineering utilizing funds from the U.S. Nuclear Regulatory Commission's (NRC) Nuclear Education Program Fellowship Grant Program. Two fellowships will be for a four year period with beginning in Fall 2015 semester and continuing through the Spring 2020 semester. This amount is approximately equivalent to our graduate research assistant support and will provide the fellows with full tuition and fees coverage. The amount above the $400,000.00 will be matched by the department. Recipients will be selected based on prior academic performance as demonstrated in their application to graduate school. Consideration will also be given to minorities and women to encourage them to enter our nuclear engineering graduate program. Our Department contains both mechanical and nuclear engineering programs with separate and distinct degree programs in each of the two areas. Penn State offers the Master of Science (thesis and non-thesis options), the Master of Engineering and the Doctor of Philosophy degrees in nuclear engineering. There are currently 51 graduate students enrolled in nuclear engineering at Penn State University Park. In addition, there are 95 students taking courses through our nuclear engineering distance learning program, seeking a master of engineering degree. Distance graduate students do not receive any financial aid. Of the 51 on-campus nuclear engineering graduate students, 80% are doctoral students and 65% are U.S. citizens. Our graduate program's size, coupled with our strong curriculum in nuclear power, means each year Penn State produces a large number of new engineers that enter the nuclear power workforce. Last year Penn State awarded 8 Masters of Science, 26 Masters of Engineering and 6 PhD degrees in nuclear engineering. Our MS, MEng and PhD graduates are highly recruited by all sectors associated with nuclear power, including vendors, utilities, national laboratories, academia, and government agencies. These new fellowships will attract academically strong students to continue in or to enter studies in nuclear engineering. We are confident that the recipients of these fellowships will become the future leaders in nuclear science and engineering.

Principal Investigator: Kostadin N. Ivanov, kni1@psu.edu

FIU Nuclear Research Fellowships – Growing the Opportunities

Executive Summary:

Objective: Expand the FIU Nuclear Fellowship (FNF) Program by supporting 2 additional PhD students for our PhD Radiochemistry Track to be launched in Fall 2015. These radiochemistry Ph.D. graduates will support the nuclear industry, national labs and academia. This grant will complement FIU's current NRC grants for FIU Nuclear Research Fellowships and Scholarships. A total of 8 fellowships (2/yr) will be funded on this grant for 4 years.

Benefits: FIU's nuclear program has expanded with extensive research and infrastructure support from Dept. of Energy Office of Environmental Management, DOE National Labs, and Industry. FIU's Nuclear Scholars and Nuclear Fellows programs have increased interest among our students in nuclear & radiochemistry careers. The number of awarded Nuclear Scholars and Nuclear Fellows has grown to 18, and 4 respectively, with increasing demand. Efforts to provide career opportunities for Ph.D students in this program will expand beyond NRC and DOE (labs, feds, & contractors) to include several nuclear companies. Students will be recruited internally (e.g., through FIU's Nuclear Scholarship Program) and externally through FIU's recruiting efforts from targeted undergraduate institutions with strong bachelor's programs, in our partnership with our NSF-REU Program. FIU currently has 54,000 students with 61% Hispanic and 13% African American students. The fellow's research and careers will support and benefit the nuclear sector, FIU, and South Florida.

Principal Investigator: Konstantinos Kavallieratos, kavallie@fiu.edu

Nuclear Engineering Fellowship Program

Executive Summary:

The University of Michigan Department of Nuclear Engineering and Radiological Sciences (NERS) proposes a Nuclear Engineering (NE) Graduate Fellowship Program that will provide support for 2 students per year for 4 years as NE Fellows. Fellows will be US citizens or permanent residents. The MS Fellows will receive one year (12 months) support with a guarantee of an additional term of support from Department resources if needed to complete their MS degree. The NE PhD students will be supported by the NE Fellowship for up to two years. The University of Michigan will provide cost sharing to cover the costs of supporting two students per year, regardless of residency status in Michigan. Fellowship support will include 12 months of support at the standard graduate student stipend rate and medical benefits and tuition/fees. Oversight for the NE Fellowship Program will be provided by the NE Fellowship Committee consisting of NERS faculty and staff. This committee will select the NE Fellows, monitor their progress, and evaluate the effectiveness of the NE Fellowship Program.

Principal Investigator: Thomas J. Downar, downar@umich.edu

Fellowship Education Grant, Fiscal Year 2015

Executive Summary:

The Nuclear Engineering and Engineering Physics Program (NEEP) in the Engineering Physics (EP) Department at the University of Wisconsin-Madison (UW-Madison) requests support for two fellowships for its Graduate Fellowship Program in Nuclear Engineering (NE), in support of outstanding doctoral students interested in nuclear power systems engineering and a career and employment in nuclear power related fields. Recipients will serve six months for each year of academic support. Employment may be with the U.S. Nuclear Regulatory Commission, other Federal agencies, State agencies, Department of Energy laboratories, nuclear-related industry, or academia in their sponsored fields of study. Prof. Douglass Henderson, Professor of Nuclear Engineering in the Department of Engineering Physics and Director of the Graduate Engineering Research Scholars (GERS) program and new Chair of the Department will continue to administer the department's successful fellowship program. Prof. Henderson is currently managing the NRC Fellowship Education Grant awards from 2010, 2012, 2013, and 2014 and the GERS program in the College of Engineering (since 1999). The fellowship program has and will continue to recruit and enroll top-notch, diverse students from all engineering disciplines, and award two doctoral fellowships to obtain a Ph.D. degree in Nuclear Engineering and Engineering Physics. The recruitment, selection and program administration of the students and their progress will use proven techniques from the EP department and the GERS program. The expected time duration to obtain a Ph.D. degree will be about 48 months. Depending on the students' background, the NEEP and GERS programs will supplement the fellowships if additional time is required for degree completion. Evaluation of program success will be accomplished in two ways. First, Prof. Henderson, the EP department chair will utilize EP faculty to provide an ongoing review of each student's progress toward their degree, and second, the program will be reviewed by GERS program faculty annually as part of the UW-Madison Graduate School requirements for program quality and outcome assessment. The program will continue to recruit students into the NE program from majority institutions and from our traditional minority-serving institutional partners through the GERS program.

Principal Investigator: Douglass Henderson, henderson@engr.wisc.edu

Fellowship Awards for the University of Utah Nuclear Engineering Doctoral Graduates

Executive Summary:

The University of Utah Nuclear Engineering Program (UNEP) is applying for four-year doctoral fellowship program award. Support of this fellowship award at UNEP will enable the recruitment and retention of high quality graduate students to be placed on a trajectory of career success and leadership within the State and national nuclear sector. Our goal is to recruit and retain in total, three outstanding doctoral students for this fellowship program. These students will be working on research topics involving the advancement of the nuclear fuel cycle, advanced reactor designs (including material design of accident tolerant fuel and cladding), impact of the fuel cycle on the environment and/or human health, radiochemistry, radiation transport and health physics. In addition, with **the match funding** from the Department of Civil and Environmental Engineering (where UNEP resides) and UNEP itself, we will support one master's student for a period of two years. This funding will be tailored toward a student who will transition from civil structural engineering into UNEP master's graduate program with the goal to continue into UNEP PhD program.

The main objective of this fellowship program is to recruit highly devoted students with consideration given to financial needs and with the goal of promoting the participation of minorities, women, and persons with disabilities. This new fellowship award will help UNEP continue its remarkable growth, and enhance the popularity of the graduate program by attracting outstanding students.

Principal Investigator: Tatjana Jevremovic,Tatjana.Jevremovic@utah.edu

Development of a Sustainable Bridge for Entering Nuclear Engineering Graduate Students at the University of Tennessee

Executive Summary:

Through this solicitation, the Department of Nuclear Engineering at the University of Tennessee-Knoxville (UTK) seeks to award the equivalent of eight (8) one-year fellowships directly targeted to develop a sustainable bridge for entering nuclear engineering graduate students. The aim of this fellowship program would be to fund 2 fellowships per year for the next 4 years using the proposed approach. The key goal of this proposal is, in fact, to develop the infrastructure for "bridge" funding for newly entering students. The sustainability feature of this proposal is built within our ability to maintain this bridge through a strong and diverse variety of fellowships from various sponsors in addition to the US Nuclear Regulatory Commission.

The recent and most practical implementation of these fellowships has been primarily for recruitment purposes, whereby these fellowships have been used to successfully attract and recruit new graduate students (front end), as well as to bridge funding for entering students during their first year while they align into a funded research project.

Distribution of awards and subsequent renewals will vary depending upon the pool of qualified applicants and the continued academic success of the awardees. In fact, current practice at the University of Tennessee has been to award and assess fellowships on a semester-by-semester basis to ensure good standing and continued satisfactory performance. As noted above, this fellowship program is primarily a recruiting tool to help reinforce a pipeline of talented US graduates into the UT NE program, with excellent past success upon recruiting talented and qualified students from historically underrepresented in nuclear engineering, such as African/Americans, Hispanic/Latinos, and females.

Principal Investigator: Ivan Maldonado, Ivan.Maldonado@utk.edu

Colorado School of Mines Nuclear Science and Engineering Fellowship Program

Executive Summary:

The Colorado School of Mines (CSM) proposes to establish a Nuclear Science and Engineering graduate fellowship program to increase graduate enrollment in our graduate nuclear engineering degree programs. The funding requested will support two graduate Fellows per year with the intention to attract top students to the Nuclear Science and Engineering (NSE) Program. Potential Fellows will be nominated by Nuclear Science and Engineering Faculty Members from the pool of NSE Program applicants and the nominating faculty member must agree to mentor and advise the Fellow throughout the Fellow's time at CSM. Leveraged funding from CSM is available to supplement the support from NRC. Particular emphasis will be placed on encouraging and tracking the Fellows' academic and research progress. While predominantly aimed at Ph.D. candidates, outstanding M.S. students will also be considered.

Principal Investigator: Jeffrey King, kingjc@mines.edu

Training the Next Generation of Nuclear Engineers: Graduate Fellowships at the University of California, Berkeley

Executive Summary:

The Department of Nuclear Engineering at the University of California, Berkeley (UCB) offers one of the best Graduate Program in the Nation and worldwide. Students graduating from our program are highly sought out by industry, national laboratory, and academia. The number of highly qualified students that apply to join our program is steadily increasing. However, due to limited funding, we have not been able to admit as many of the qualified applicants as we would like. The proposed fellowship program will award two 3-year graduate fellowships for Ph.D. students and two 1-year graduate fellowships for M.S. students to support a total of four students, and will be leveraged to create a long-term sustainable strategy for growing our Graduate Program. Utilizing the existing opportunities and systems readily available in the College of Engineering and the Nuclear Engineering Department at UCB, we will establish an effective system for recruitment, selection, monitoring/mentoring, and feedback. The Principal Investigator and co-PIs will serve as mentors for the graduate students, in addition to the research advisor(s) to provide additional support to the selected students and facilitate their success.

Principal Investigator: Massimiliano Fratoni, maxfratoni@berkeley.edu

LSU Fellowships Program in Health Physics

Executive Summary:

The long term objective of this project is to increase the number of well-trained radiation professionals in the national and regional workforces. The objective of this project is to attract well qualified students to seek graduate training in Health Physics at LSU. The benefits of this project to the NRC include additions to the nuclear workforce with 12 MS graduates, increased representation of women and minorities in the nuclear workforce, and increased educational activities in a state of relevance to the NRC and its mission. The program prepares graduates for successful careers involving the design, operation, and regulation of radiation facilities and nuclear materials. The LSU Health Physics Program has in place the scientific, instructional, and administrative staff to successfully complete this project.

Principal Investigator: Wayne D. Newhauser, newhauser@lsu.edu

University of South Carolina Excellence in Nuclear Engineering Fellowship Program

Executive Summary:

A fellowship program for two concurrent graduate students pursuing degrees in nuclear engineering (NE) at the MS or PhD level is proposed. Partial support for tuition and fees would be supplied by the NRC funds and the remainder would come from the advising faculty member or leveraged funding. No support is provided for the PI or Co-PI or other personnel to administer this project. All support is directed for the advancement of the selected Fellows. The Fellow's faculty advisor would act as a resource for the students to guide them in pursuit of a nuclear related career path. Interactions with many of the nearby nuclear industrial concerns would also be promoted to give students a robust understanding of nuclear related careers and opportunities in the nuclear engineering field. The USC program enjoys strong ties with the nuclear industry including extensive representation on the advisory board and frequent interactions through the local ANS, NAYGN, WIN, AABE, plant visits, and special nuclear related career days. These strong industry ties and the career opportunities they highlight to students will help ensure that high quality students are attracted to the program and selected Fellows retain a strong commitment to a nuclear related career. The previous Fellowship Program has been very successful with two of the eight Fellows supported now working for the NRC and two of the eight were female. The NE Program is growing with a new faculty member hired in Fall 2014 and an additional faculty member to start in Fall 2015. These new hires are part of two centers awarded by the State of SC SmartState Centers of Economic Excellence. Each has an endowment from the state and is partially matched by endowments from industry. These additional leveraged funds and institutional support help to support the growth and development of nuclear engineering scholars at USC.

Principal Investigator: Travis W. Knight, twknight@sc.edu;

UNLV Nuclear Science and Engineering Fellowship Program

Executive Summary:

To address the human capital challenge and to engage underrepresented groups in the nuclear engineering professional community, we propose to establish the *UNLV Nuclear Science and Engineering Fellowship Program* at the University of Nevada, Las Vegas. The program will award at least four Ph.D. fellowships and two M.S. fellowships over four years, with the potential of offering up to 12 awards depending on the growth of externally funded research activities. UNLV is in a unique position as a Minority Serving Institution with active graduate programs in Health Physics (M.S., DMP), Nuclear Engineering (M.S., Ph.D.), and Radiochemistry (Ph.D.). The proposed fellowship program will strive not only to recruit internally, but expand recruiting efforts to the national student population. The UNLV Nuclear Science and Engineering Fellowship Program is aimed at developing human capital with advanced degrees to address current shortfalls, and select and train a new cadre of nuclear experts with diverse backgrounds to meet the needs of the United States nuclear industry for the near and long term.

Principal Investigator: Gary Cerefice, gary.cerefice@unlv.edu

Fueling Thriving Growth of Nuclear Engineering Graduate Program at Rensselaer Polytechnic Institute

Executive Summary:

The project will offer fellowship support for two graduate students to pursue education and careers in the nuclear engineering field. Up to two fellowships shall be awarded per year, over four years. The project is intended to develop and maintain the nuclear workforce by promoting two important goals. Firstly, by supporting new graduate students, the fellowship will encourage advanced training and experience for those entering the nuclear field, especially minority students. Secondly, the fellowship opportunities will increase the interest in nuclear engineering graduate study, leading to a greater number and diversity of those being trained in nuclear technology.

Principal Investigator: Li (Emily) Liu, liue@rpi.edu

University of Illinois at Urbana-Champaign Nuclear Engineering Education Fellowship Program

Executive Summary:

The objectives of this program are to attract and educate top US graduate students in nuclear engineering. This will be accomplished with the financial resources from the NRC and the academic and administrative resources from the Department of Nuclear, Plasma and Radiological Engineering (NPRE) at the University of Illinois at Urbana-Champaign. This program will ensure that the best and brightest students are well prepared to join the nuclear workforce following a very strong, competitive graduate education in nuclear engineering. The NRC Fellowship resources will be used to attract and support at least three (3) graduate students each year for the four year duration of the award.

Principal Investigator: James F. Stubbins, jstubbin@illinois.edu