**2014 Minority Serving Institutions Program**

| University | Amount | Title |
|---|---|---|
| Alabama A&M | $20,740 | Project NERVE – Nuclear Education and Research Vertical Enhancement |
| Blackfeet Community College | $200,000 | Development of AS Degree Programs in Civil & Electrical Engineering, Electronic Engineering Technology and Civil Engineering Technology |
| California State University Dominguez Hills | $100,000 | Nuclear Safety Applications of Autonomous Robots (research related to use of robots for ground, aerial & underwater nuclear safety) |
| City College of New York | $239,994 | New York - Nuclear Research Opportunities Program (NY-NROP) – The Research Foundation CUNY |
| College of Menominee Nations | $50,000 | The Presidential STEM Leadership Program for Native American Students |
| College of Menominee Nations | 100,000 | Transforming the Fundamental Academic Framework to Support College-Ready Students |
| Florida A&M University | $378,440 | Preparation for Future Nuclear Scientists & Engineers |
| Florida Memorial University | $118,440 | The Enhancement of Educational & Research Nuclear Science Programs at FMU |
| Fort Valley State University | $112,800 | Cooperative Development Energy Program (CDEP) |
| Fort Valley State University | $178,300 | Establishing a Nuclear Science & Engineering Minor at FVSU |
| Fort Valley State University | $200,000 | Pre-College Pipeline: Mathematics, Science, and Engineering Academies for Students from Under- Represented Minorities and Females |
| Howard University | $160,000 | Howard University Critical Mass Project: Increasing the Numbers of African Americans Receiving Doctoral Degrees in Nuclear Physics |
| Jackson State University | $90,000 | Risk Assessment and Risk Management of Nuclear Technology Through Large Scale Simulation and Modeling |

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|---|---|---|
| Meharry Medical College | $50,000 | Educational and Research Interventions for the NRC |
| Morehouse College | $150,000 | Research Training and Curriculum Development: Support Nuclear Science Curriculum Development Program |
| Morgan State University | $120,000 | The Preparation of Precursors and Models for the Immobilization of Technetium Wastes – Cancer Research Innovations |
| Navajo Technical College | $200,000 | Development of BS Degrees in Computer & Environmental Engineering; Development of GeoSpatial Engineering Program |
| Nebraska Indian Community College | $100,000 | Nebraska Indian Community College's Enhancement and Persistence into STEM program |
| Norfolk State University | $90,000 | Increasing the Recruitment and Retention of Underrepresented Students in STEM majors through Nuclear Safety Research |
| North Carolina A&T University | $50,000 | Design of Active Control for Seismically Excited Nuclear Plans Considering Time-Delays and Stochastic Vibration |
| South Carolina State University | $211,700 | Scholarship Support for the Nuclear Engineering Program (NEP) at South Carolina State University (SCSU).] |
| Tuskegee University | $190,000 | Freshman Accelerated Start-Up & Training for Retention in Engineering Curricula |
| United Tribes Technical Colleges | $100,000 | Development of Associate of Applied Science Degree program in Environmental Pre-Engineering and Computer Information Technology |
| University of Houston Downtown | $177,88 | NRC HSI/MSI: Increasing Underrepresented in the Nuclear Industry<br>(NRC HSI/MSI IUNI) |
| University of Texas – Permian Basin | $124,000 | West Texas Nuclear Energy Education (NEEd) Project |

**Alabama A&M**

**Project Title:** Project NERVE – Nuclear Education and Research Vertical Enhancement

**Principal Investigator (PI):** Dr. Stephen U. Egarievwe, stephen.egarievwe@aamu.edu

**Total Funding Request:** $360,000 for 3 years

**Executive Summary**

The goal and objectives of this multidisciplinary and collaborative project is to increase the number of students and faculty from underrepresented groups (women and minorities) in fields related to the nuclear industry. This will be accomplished through an education-to-workforce approach that comprises of well integrated multi-track interdisciplinary education and research activities that cut vertically across middle/high schools, two-year colleges, undergraduate education, graduate schools, and postdoctoral training. This innovative and novel approach has a solid infrastructure supported with training resources/facilities from Alabama A&M University, DOE's Brookhaven National Laboratory, Tennessee Valley Authority nuclear plants, and ICX Radiation technologies.

The benefits and outcomes include 1) nuclear engineering technology concentrations at the undergraduate and graduate school levels, which will serve as direct education-to-workforce pipelines for the nuclear industry; 2) recruitment of women and underrepresented minorities into the nuclear concentrations each year, with a retention rate greater than 75 percent, and more than 60 percent of the graduates joining the nuclear industry workforce or pursuing advanced degrees in related fields; 3) one postdoctoral trainee and one additional faculty, from underrepresented groups in nuclear industry related fields; and 4) a nuclear instrumentation laboratory for training students developing careers in nuclear power plants, nuclear waste management, domestic nuclear security and safeguard, health physics, and radiology.

**Blackfeet Community College**

**Project Title:** Development of Civil and Electrical Engineering, Electronic Engineering Technology and Civil Engineering Technology

**Principal Investigator:** Mr. Roger Mad Plume, rmadplume@bfcc.org

**Total Funding Requested:** $500,000 over 5 years

**Executive Summary:**
The principal objective of this proposal was the development of three new Associate of Science Degree Programs: AS with concentrations in Civil & Electrical Engineering; AS in Electronics Engineering Technology and AS in Civil Engineering Technology. Revised project objectives are to build a Pre-Engineering program to provide academic preparation for students to transfer to a four-year institution; and focus on developing math curriculum to support the Civil Engineering Program through student support services and strategic recruitment.

BCC is a primary institution of higher learning for the Blackfeet Nation, and is located on the Blackfeet Indian Reservation. As part of the curriculum development, this program will enhance and reinforce building a Civil Engineering program.

**California State University Dominguez Hills**

**Project Title:** Nuclear Safety Applications of Autonomous Robots (research related to use of robots for ground, aerial & underwater nuclear safety)

**Principal Investigator:** Dr. Antonia Boadi, aboadi@csudh.edu

**Total Funding Requested:** $549,994 over 5 years

**Executive Summary:**
CSU Dominguez Hills (CSUDH) requests $508,966 to establish a research initiative related to the use of ground-based, aerial and underwater robots in nuclear safety applications. Through mentor-protégé partnerships with the Naval Postgraduate School and the University of Southern California, CSUDH will apply methodologies originally developed for the implementation of robotic agents in homeland defense and security applications to problems in the nuclear safety domain.
The primary objective of the proposed project is to increase the number of CSUDH students and faculty, especially those from under-represented groups, with research training related to the use of robots in nuclear energy applications. It is anticipated that this project will result in the development of analytic and simulation tools that facilitate autonomy for robotic agents when acting alone, as members of robotic teams or in collaboration with human operators.

**City College of New York**

**Project Title:** New York - Nuclear Research Opportunities Program (NY-NROP) – The Research Foundation CUNY

**Project Director and Principal Investigator:** Masahiro Kawaji, mkawaji@ccny.cuny.edu

**Total Funding Requested:** $549,994 over 5 years

**Executive Summary:**
York - Nuclear Research Opportunities Program (NY-NROP)" at City College of New York (CCNY), which is a minority and a Hispanic Serving Institution. This program will enable five Master of Engineering (M.Eng.) and one Ph.D. students to conduct cutting edge research in the Nuclear Thermal-hydraulics and Safety Research Laboratory at the Energy Institute located in the Grove School of Engineering at CCNY. The proposed program will provide minority students with the research experience, advanced knowledge and skills needed to pursue successful careers in the nuclear industry, National Laboratories and government agencies such as NRC and DOE.

The NROP scholars will conduct numerical and experimental investigations of thermal-hydraulics problems relevant to the design, operation and safety of current and future nuclear reactors. They will be American citizens or permanent residents from under-represented minority groups and selected based on their past academic performance, interests and motivation to pursue careers in the nuclear field. The NROP scholars will be recruited from CCNY and two other minority serving institutions in the New York City area, Medgar Evers College and Lehman College. In addition, every summer two NROP scholars will spend three months as interns at Brookhaven and Argonne National Laboratories to gain industrial-scale research experience.

All of the NROP scholars will be advised by the following Principal Investigators of this proposal who are faculty members in the Grove School of Engineering at City College of New York, as well as collaborators at Medgar Evers College and Lehman College.

**College of Menominee Nations**

**Project Title:** The Presidential STEM Leadership Program for Native American Students

**Principal Investigator:** Mr. Gary Besaw, gbesaw@menominee.edu

**Total Funding Requested:** $450,000 over 3 years

**Executive Summary:**
The principal objective of this proposal is the implementation of The President's Science, Technology, Engineering and Math (STEM) Leadership program whose overall goal is to increase the number of educated Native American STEM skilled employees.

**College of Menominee Nations**

**Project Title:** Transforming the Fundamental Academic Framework to Support College-Ready Students

**Principal Investigator (PI):** Jennifer Morris, jmorris@menominee.edu

**Total Funding Request:** $399,959 for three years

**Executive Summary**

This College of Menominee Nation project focuses on transforming the fundamental academic framework to support both college-ready students and students who are not yet college ready. This will result in a comprehensive consolidated effort to ensure students have a cohesive and coherent support system as they move through CMN from assessment and placement through gateway course and emphasis course completion. Of particular note is the attention paid to high impact completion practices. The transformation will ultimately increase the recruitment of students into STEM programs, and their persistence through those programs.

The overall goal of this project is to expand the pool of college-ready and nearly college-ready students who enter the STEM pipeline, remain on track, and matriculate to advanced studies in STEM fields either at CMN or with our partner institutions. Through improved assessment, counseling, and placement, CMN will increase STEM degree-seeking student enrollment by 30%. STEM students will experience higher success rates (grade of “C” or higher) in gateway courses and improvement in first term GPAs. Course success will lead to a higher percentage of STEM students who maintain good standing and who are retained through their third term. This academic preparation, informed by Tribal cultural values, will enable these students to contribute to advancing the Nuclear Regulatory Commission’s mission of nuclear safety, security, and environmental protection. The project objectives include:

**Florida A&M Univeristy**

**Project Title:** Preparation for Future Nuclear Scientists & Engineers

**Principal Investigator:** Frederic Essien, Frederic.essien@famu.edu

**Total Funding Requested:** $400,000 over 4 years

**Executive Summary:**
The objective of this proposal is to support the Cooperative Development Energy Program (CDEP) of Fort Valley State University, a technical workforce program that focuses on increasing the number of minorities and women with degrees in physics, geology, geophysics and engineering. FVSU has partnered with Georgia Institute of Technology, Penn State University, University of Nevada, Las Vegas, University of Texas-Austin, and the University of Texas-Pan American to reach their goal. This CDEP is a double STEM degree program because not only are individuals receiving degrees in engineering, geosciences, and health physics, they are also earning degrees in math, biology and chemistry.

**Florida Memorial University**

**Project Title:** The Enhancement of Educational & Research Nuclear Science Programs at FMU

**Principal Investigator:** Dimitri Tamalis, Ph.D., dtamalis@fmuniv.edu

**Total Funding Requested:** $399,244 over 4 years

**Executive Summary:**
Florida Memorial University, an HBCU in south Florida, is the only institution with comprehensive undergraduate radiochemistry and radiobiology programs. We propose to enhance both the educational and research components of these programs with training of students in Health Physics and the radioactive characterization of samples from the vicinity of local nuclear power plants (environmental monitoring). The second objective will result in the improvement of the laboratory courses in the two aforementioned programs, in the development of a robust research nuclear program on campus, the training of qualified students who will enter the nuclear workforce and collaboration with nuclear power plants, academic institutions, and national laboratories. All of the listed objectives are aligned with IAEA and NRC stated objectives. The acquisition of a radioactive license and training of the PI (Dr. Dimitri Tamalis) as the Radiation Safety Officer, and collaborations (University of Texas at Austin, University of Nevada at Las Vegas, the Los Alamos National Laboratory, Florida Power and Light) will enable the FMU nuclear programs to achieve these objectives. Currently, our Nuclear Science Laboratory is equipped with hand held Geiger counters, sealed radioactive sources, dedicated radiochemistry fume hood, radiation monitors, a NaI detector, a mechanically cooled germanium detector and an alpha spectrometer.

**Fort Valley State University**

**Project Title:** Cooperative Development Energy Program (CDEP)

**Principal Investigator:** Isaac J. Crumbly, Ph.D., Crumblyi@fvsu.edu

**Total Funding Requested:** $564,000 over 5 years

**Executive Summary:**
The objective of this proposal is to support the Cooperative Development Energy Program (CDEP) of Fort Valley State University, a technical workforce program that focuses on increasing the number of minorities and women with degrees in physics, geology, geophysics and engineering. FVSU has partnered with Georgia Institute of Technology, Penn State University, University of Nevada, Las Vegas, University of Texas-Austin, and the University of Texas-Pan American to reach their goal. This CDEP is a double STEM degree program because not only are individuals receiving degrees in engineering, geosciences, and health physics, they are also earning degrees in math, biology and chemistry.

**Fort Valley State University**

**Project Title:** Establishing a Nuclear Science & Engineering Minor at FVSU

**Principal Investigator:** Dr. Masoud Naghedolfeizi, feizim@fvsu.edu

**Total Funding Requested:** $329,443 over 3 years

**Executive Summary:**
The primary objective of this project is to design and offer a minor in the field of Nuclear Science and Engineering in order to expose students to cutting edge technologies in this field. Students will require taking four courses, namely a two-course sequence in Nuclear Science and Engineering with laboratory components, a course in nuclear radiation and an introductory course in health physics. Some of the other key objectives of this program include:

- Developing the technological infrastructure for the minor program in basic nuclear science
- Incorporating a research component in our undergraduate applied science programs
- Increasing the recruitment and retention of underrepresented students in the science, math, engineering, and Engineering programs

As a result of this project, FVSU will become the first HBCU in Georgia to offer a structured curriculum in this field and enable students to pursue career choices in nuclear energy related fields.

The design and implementation of the above curricula will improve the technological infrastructure at Fort Valley State University and will help students gain a solid foundation in computer science, physics, mathematics, engineering and experimental sciences. It is anticipated that this project will pave the way for offering an Associate Degree in this field and also increase the recruitment and retention rates of African American students in the fields of science and Engineering.

**Fort Valley State University**

**Project Title:** Pre-College Pipeline: Mathematics, Science, and Engineering Academies for Students from Under- Represented Minorities and Females

**Principal Investigator:** Isaac J. Crumbly, Ph.D., Crumblyi@fvsu.edu

**Total Funding Requested:** $803,632 over 3 years

**Executive Summary:**
The Mathematics, Science, and Engineering Academy (M-SEA) is a twenty-one year old pre-college STEM outreach program for underrepresented minorities and female students and is operated by the Fort Valley State University's Cooperative Developmental Energy Program (CDEP). M-SEA consists of four summer academies, 9th, 10th, 11th, and 12th grade academies. The 9th and 12th grade academies are two weeks in duration while the 10th and 11th grade academies are one week in duration. A total of 100 students participate each summer.

M-SEA students enter the program during the summer as rising 9th graders and are selected on the basis of their academic performance and state standardized test scores. Students take a pre-test at the beginning of the 9th, 10th, and 11th grade academies and a post test at end of each academy. Each student must score a minimum of 80% on their M-SEA posttest as one of the criteria for continued participation. Additionally, during the academic school year, students cannot make a semester grade less than a B in any science or math class and must maintain an overall gpa of 3.0 or above.

The 9th and 12th grade academies are held on the campus of Fort Valley State University and 10th and 11th grade M-SEA academies are held on the campuses of the University of Nevada at Las Vegas and the University of Arkansas, respectively. Students in the 9th grade academy also visit the campuses of Penn State University and Georgia Institute of Technology. When the M-SEA students complete 12th grade, they will be eligible to enroll into CDEP's dual degree programs in engineering, geology, geophysics and health physics between Fort Valley State University and its partnering universities. During its four-year duration, the project will mentor a total of 175 students.

**Howard University**

**Project Title:** Howard University Critical Mass Project: Increasing the Numbers of African Americans Receiving Doctoral Degrees in Nuclear Physics

**Principal Investigator:** Marcus Alfred, maralfre@howard.edu

**Total Funding Requested:** $222,200 over 5 years

**Executive Summary:**
The Goal of the HU Critical Mass Project is to increase the number of African American physics majors graduating from Howard University that will enter graduate school in nuclear physics and have a career in nuclear science. There are three objectives associated with this goal: select and award African American physics majors a $10,000 stipend each year of the project, support participants through rich diversity of support structures, and expose participants to summer research opportunities in nuclear science outside of Howard University. The components of the project include: research stipends, support structures, research experiences at Howard and elsewhere for participants, and research community building activities. Relevant management participants include the PI and an executive committee.

**Jackson State University**

**Project Title:** Risk Assessment and Risk Management of Nuclear Technology Through Large Scale Simulation and Modeling

**Principal Investigator:** Shahrouz K. Aliabadi, saliabadi@jsums.edu

**Total Funding Requested:** $450,000 over 5 years

**Executive Summary:**
Our main goal in this project is to provide further enlightenment to communities, public, and scientific societies for the risk assessment and risk management of radioactive exposure through inhalation using state of the art multi-scale multi-physics computer simulation, in silico, methodologies. Linked to the main goal, our secondary goal will be to demonstrate a comprehensive in silico technology that can be used in many specific radioactive exposure problems such as medical applications, industrial processing, and fallouts from accidents, malicious incidents, and after military operations, trainings, or tests to mention a few. Our study will cover both public and occupational exposures and aim to fill a gap in understanding these kinds of exposures not possible, difficult, or expensive through experiments or measurements.

To achieve these goals, our objectives;

- In regard to public exposure, for macro level studies, we will integrate a publicly available regional and global atmospheric model (Weather Research and Forecasting, WRF) into our general-purpose high fidelity Computational Fluid Dynamics (CFD) model (CaMELCHH3) including transport of radioactive particulate matters to estimate cumulative long term street level radioactive exposure in urban environment.
- In regard to occupational exposure in microenvironments, we will model complete work environments such as building rooms and instruments or machines with human subjects exposed respiratory tracks, and lungs including alveolus to track fate of radioactive particulate deposition.
- To understand adverse effects of the both kinds of exposures on human health, we will integrate simulated exposures for longer time period such that a cumulative exposure over years can be estimated and may be linked to certain health outcomes.

**Meharry Medical College**

**Project Title:** Educational and Research Interventions for the NRC

**Principal Investigator:** Dr. Clivel Charlton, ccharlton@mmc.edu

**Total Funding Requested:** $200,000 over 4 years

**Executive Summary:**
The ultimate goal of activities conducted under this Nuclear Regulatory Commission activity seek to establish 1) a targeted professional MS degree programs in functional and computational environmental-occupational toxicology in conjunction with Y12 National Security Complex (Y12) and Oak Ridge National Laboratory (ORNL) and 2) scientific research programs with Y12 National Security Complex scientists to better understand the consequences of nuclear fallout disposition to the developing central nervous system and subsequent effects on cognitive processes in high-risk populations. This partnership will serve to provide a customized pipeline for biomedical science and professional positions at Y12, ORNL and other national security complexes. We have conceptualized and organized this Nuclear Regulatory Commission funded activity according to and consistent with the multidisciplinary framework of our pre-existing programs here at Meharry Medical College and this represents a logical extension of our activities.

**Morehouse College**

**Project Title:** Research Training and Curriculum Development: Support Nuclear Science Curriculum Development Program

**Principal Investigator:** James Page Brown, Ph.D., jpbrown@morehouse.edu

**Total Funding Requested:** $250,000 over 4 years

**Executive Summary:**
The purpose of this proposal is for Morehouse College to redesign its course in Nuclear and Particle Physics which trains physics majors and pre-engineering students. A unique element of this proposal involves experimental and research training in collaboration with our institutional partner Oak Ridge National Lab and engagement of nuclear science faculty from Georgia Institute of Technology.

**Morgan State University**

**Project Title:** The Preparation of Precursors and Models for the Immobilization of Technetium Wastes – Cancer Research Innovations

**Principal Investigator:** Santosh K. Mandal, santosh.mandal@gmail.com

**Total Funding Requested:** $200,000 over 2 years

**Executive Summary:**
The essential element of the project is to transform Re2O7 to covalently bonded perrhenato complexes, (CO)3L2MnOReO3 and Tc2O7 to pertechnetato complexes, (CO)3L2MnOTcO3 from their reactions with manganese hydrides, (CO)3L2MnH. It is expected that immobilization of (CO)3L2MnOReO3 or (CO)3L2MnOTcO3 by vitrification in the presence of glass materials (soda ash, silica, and boric oxide) will suffer little volatilization due to the covalent nature of the bonds

The objective of this project is to develop chemical methods for reducing the technetium volatility problem and at the same time improving technetium immobilization by enhancing its incorporation into durable glass and ceramic forms. Since there are no non-radioactive forms of technetium, much of the preliminary work for this project will be focused on the use of non-radioactive surrogates that have strongly similar chemical properties to the technetium oxides. The rhenium heptoxide, Re2O7 has similar chemical properties to the technetium heptoxide, Tc2O7 and thus should serve as an excellent surrogate for the study of the immobilization of technetium oxide forms. All successful studies involving Re2O7 will be duplicated and confirmed by using the radionuclide, 99gTc.

We believe that the conversion of Re2O7/Tc2O7 to the covalent ReO4/TcO4 complexes by transition metal hydrides and immobilization of technetium nuclear wastes will be easy and inexpensive processes because the starting materials, manganese hydrides, (CO)3L2MnH are very easy to synthesize and very stable compounds at room temperature and in air.

**Navajo Technical College**

**Project Title:** Development of a Geospatial Engineering Technology Program (GET) at Navajo Technical College.

**Principal Investigator:** Harold Scott Halliday, hhalliday@navajotech.edu

**Total Funding Requested:** $500,000 over 5 years

**Executive Summary:**
The purpose of this proposal is for the Navajo Technical College/Crownpoint Institute of Technology to develop a Geospatial Engineering Technology Program (GET). One benefit of this proposed work will be to enhance current Associate of Applied Science degree program curricula and provide graduates with a solid foundation either for immediate employment or further education.

**Nebraska Indian Community College**

**Project Title:** Nebraska Indian Community College's Enhancement and Persistence into STEM program

**Principal Investigator:** Hank Miller, hmiller@thenicc.edu

**Collaborator:** Dr. Michael Oltrogge, President; Nebraska Indian Community College; PO Box 428; Macy NE 68039; moltrogge@thenicc.edu – (402) 960-5176

**Total Funding Requested:** $399,842 over 5 years

**Executive Summary:**
The goal of the NICC's Enhancement and Persistence into STEM fields is to 1) increase the number of students who take STEM related courses; 2) increase the number of students who persist to course completion; and 3) to increase the number STEM courses available. The benefit will be increased STEM capacity at NICC and increased student, both college and high school enrollment on the Santee Sioux and Omaha Reservations.

**Norfolk State University**

**Project Title:** Increasing the Recruitment and Retention of Underrepresented Students in STEM majors through Nuclear Safety Research

**Principal Investigator:** Dr. Eleanor L. Hoy, elhoy@nsu.edu

**Total Funding Requested:** $360,000 over 5 years

**Executive Summary:**
Researchers are using video motion detection (VMD) in various applications such as security, traffic safety, and autism research. The focus of this research is to develop a method to adapt and apply this technology to develop an instrument capable of measuring the effects of long term exposure to low level radiation upon psycho-physiological functions in those exposed and their offspring. The function of the research is to investigate the adaptation of the instrument to this new field of inquiry. Funding of this grant will allow faculty at Norfolk State University, a minority serving Historically Black University, to satisfy four parallel objectives with associated benefits.

- An increase in the number of underrepresented students and faculty exposed to research in the field of Nuclear Safety.
- Development of critical thinking and problem solving skills in students through Nuclear Safety research.
- Development of a measurement instrument and test procedure for analyzing the effects of long term exposure to low level radiation.
- Greater recruitment and retention of underrepresented students and faculty in STEM majors.

**North Carolina A&T University**

**Project Title:** Design of Active Control for Seismically Excited Nuclear Plants Considering Time-Delays and Stochastic Vibration

**Principal Investigator:** Dr. Sun Yi, syi@ncat.edu

**Total Funding Requested:** $100,000 over 2 years

**Executive Summary:**
A reliable active control method will be developed to mitigate the impacts on nationally critical structures, such as nuclear power plants, exposed to earthquake load. The new method will incorporate two critical factors (time-delays and stochastic excitations), and will be based on analytical solutions newly derived by the PI, unlike existing methods for time-delay systems. Since it does not depend on approximations or predictions, the new method will show improved accuracy and robustness in performances. Also, in parallel with the proposed research activities, educational materials will be developed for underrepresented undergraduate and graduate students to have hands on practice through experimental tests in relevant areas based on research results. The education topics include mathematical modeling of dynamic systems using differential equations, instrumentation, and design of control.

**South Carolina A&T University**

**Project Title:** Scholarship Support for the Nuclear Engineering Program (NEP) at South Carolina State University (SCSU).

**Principal Investigator:** Stanley N. Ihekweazu, Ph.D., sihekwea@scsu.edu

**Total Funding Requested:** $311,700 over 3 years

**Executive Summary:**
The South Carolina State University's Nuclear Engineering and Science Programs is submitting a scholarship grant to the U.S. Nuclear Regulatory commission grant program SBCR-FN-0511-MSIP02.The scholarship grant will be used to provide tuition, room and board and book scholarship support in the amount of $374,087 for eight (8) undergraduate students majoring in Nuclear Engineering, Radio Chemistry, Health Physics and other STEM disciplines for a two year project period. Scholarship recipients will be required to participate in a speaker series designed to introduce them to professionals in the field and broaden their knowledge of career opportunities.

Since its inception in 2001, the Nuclear Engineering Program has focused on producing minority Nuclear Engineers. The Program has produced sixteen graduates to date, eight of which graduated this past May (2011). Over the past few years, the program has grown dramatically, and nearly half of the current 55 students are female. In November 2007, the Nuclear Engineering Program (NEP) was reviewed by an Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC of ABET) team, and received a favorable review. The program received the ABET-EAC accreditation in August 2008.

The Radiochemistry program, initiated in 2005, has produced eight graduates, most of whom are minority females. Most of them are currently pursuing advanced or professional degrees in Radiochemistry and Homeland Security areas or nuclear pharmacy. The NEP at South Carolina State University has a Health Physics option within the Department of Biological and Physical Sciences, Enrollment in the program is expected to grow due to recruitment efforts both internally and externally from technical college transfer students. Two technical colleges, Midlands Technical College in Columbia, SC and Orangeburg-Calhoun Technical College have expressed interest in joint programs in Health Physics with South Carolina State University. Two preliminary meetings have already been held with these schools.

**Tuskegee University**

**Project Title:** Freshman Accelerated Start-Up and Training for Retention in Engineering Curricula (FASTREC)

**Principal Investigator:** Dr. Shaik Jeelanis, jeelanis@tuskegee.edu

**Total Funding Requested:** $500,000 over 5 years

**Executive Summary:**
This proposal is for development of the Freshman Start-up and Training for Retention in Engineering Curricula (FASTREC) at Tuskegee University. This program is an intense eight week summer program offered to students accepted at Tuskegee and interested in engineering careers. In FASTREC, students pursue an intensive course of study in mathematics, science, engineering graphics, and freshman orientation. This special pre-engineering summer program provides students with an early opportunity to begin their engineering career.

**United Tribes Technical Colleges**

**Project Title:** Development of Science Degree Programs in Environmental, Pre-Engineering, and Computer Information Technology

**Principal Investigator:** Dr. Jennifer Janecek-Hartman, jjanecekhartman@uttc.edu

**Total Funding Requested:** $500,000 over 5 years

**Executive Summary:**
This proposal's aim is to obtain support to develop and sustain the Associate of Applied Science Degree Programs in Environmental, Pre-Engineering, and Computer Information Technology. (Tribal Land Grant and inter-Tribal College). United Tribes Technical College is in partnership with Salish Kootenai Environmental Pre Engineering program, as well as the Presidential STEM Program. Development of this program will establish a two-year environmental pre-engineering degree program which allows students to complete their general education course requirements as well as their programmatic required course to complete their respective degree within an intertribal college setting. Those wishing to complete a bachelor's degree will transfer to a mainstream institution.

The project will precisely target resources to affect classroom practices and student achievement increasing the number of students matriculating into engineering degrees. Professional development activities will be practical, based upon research, and efficiently delivered.

**University of Houston Downtown**

**Project Title:** NRC HSI/MSI: Increasing Underrepresented in the Nuclear Industry (NRC HSI/MSI IUNI)

**Principal Investigator:** Dr. Mary Jo Parker, parkerm@uhd.edu

**Total Funding Requested:** $450,000 over 5 years

**Executive Summary:**
The well-defined and focused project aims include: 1) Increase the number of underrepresented STEM students entering graduate programs in nuclear sciences, nuclear engineering, and nuclear medicine through establishment of pipeline partnerships with graduate programs, 2) Institution of scholarship, mentorship, and research opportunities creating a network of support for underrepresented STEM students, while also encouraging graduate degrees in the nuclear sciences after baccalaureate graduation through partnered, mentored activities, and 3) Creating and sustaining a direct pipeline for underrepresented STEM students entering graduate level nuclear sciences occurs through establishment of industry partnerships, increased availability of offsite field trips, mentored, summer scholarly research opportunities, and seminar series.

**University of Texas Permian Basin**

**Project Title:** West Texas Nuclear Energy Education (NEEd) Project

**Principal Investigator:** Dr. James Wright, wright_j@utpb.edu

**Total Funding Requested:** $372,000 over 3 years

**Executive Summary:**
The University of Texas of the Permian Basin (UTPB) is a small (~3,700 students) Hispanic Serving Institution (HSI) with two-thirds of the students being first-generation college graduates. UTPB seeks to increase the number of West Texans, particularly Hispanic West Texans, entering careers in nuclear science and engineering in our region and nationwide.

The NEEd project meets the needs of the growing regional nuclear energy industry for science and engineering degreed graduates with expertise in nuclear energy. NEEd activities include curriculum development to create academic programs appropriate for entry into nuclear energy industry careers; promotion of nuclear energy careers to students in area junior high schools, high schools, and colleges; support for UTPB students identified as pursuing nuclear career education (NEEd students); and provision of extracurricular experiences in nuclear energy for NEEd students.