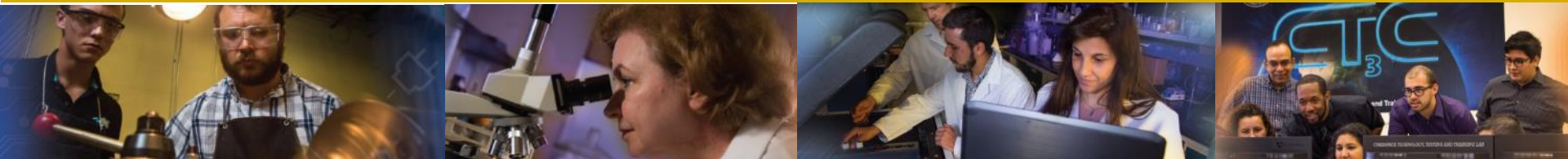




DOE-EM Cooperative Agreement

Presented: July 18, 2017

Dr. Leonel Lagos, PMP[®] (Principal Investigator)





Florida International University

- FIU is among the 10 largest public universities in the U.S. (~56,000 students in 2016)
- Top tier research institution - R1 Carnegie Classification for Highest Research Activity
- ABET accreditation
- **First in nation in awarding bachelor's and master's degrees to Hispanic students.**
- Designated a Minority-Serving Institution.



The Applied Research Center



- Founded in 1995
- Executes basic/fundamental and applied research for DOE, DoD, FAA, NSF and other State agencies and private industry.
- Portal concept provides ease of access to FIU's Colleges and Centers to facilitate collaborative research.
- Multicultural and multilingual staff.
- Project Management Professionals (PMP®) and Professional Engineers (PE).
- Successful STEM Workforce Development Programs (DOE Fellows and Cyber Fellows).





Applied Research Center Facilities



Robotics & Sensors Lab - Technology Testing & Demonstration Facility – Radiological Lab – Analytical Chemistry Lab – Soil & GW Lab – Multi-Function High Bay – GIS Lab – Cybersecurity Lab – Secure Server Room – Engineering Design Center – Machine Shop



Current Cooperative Agreement Research Efforts

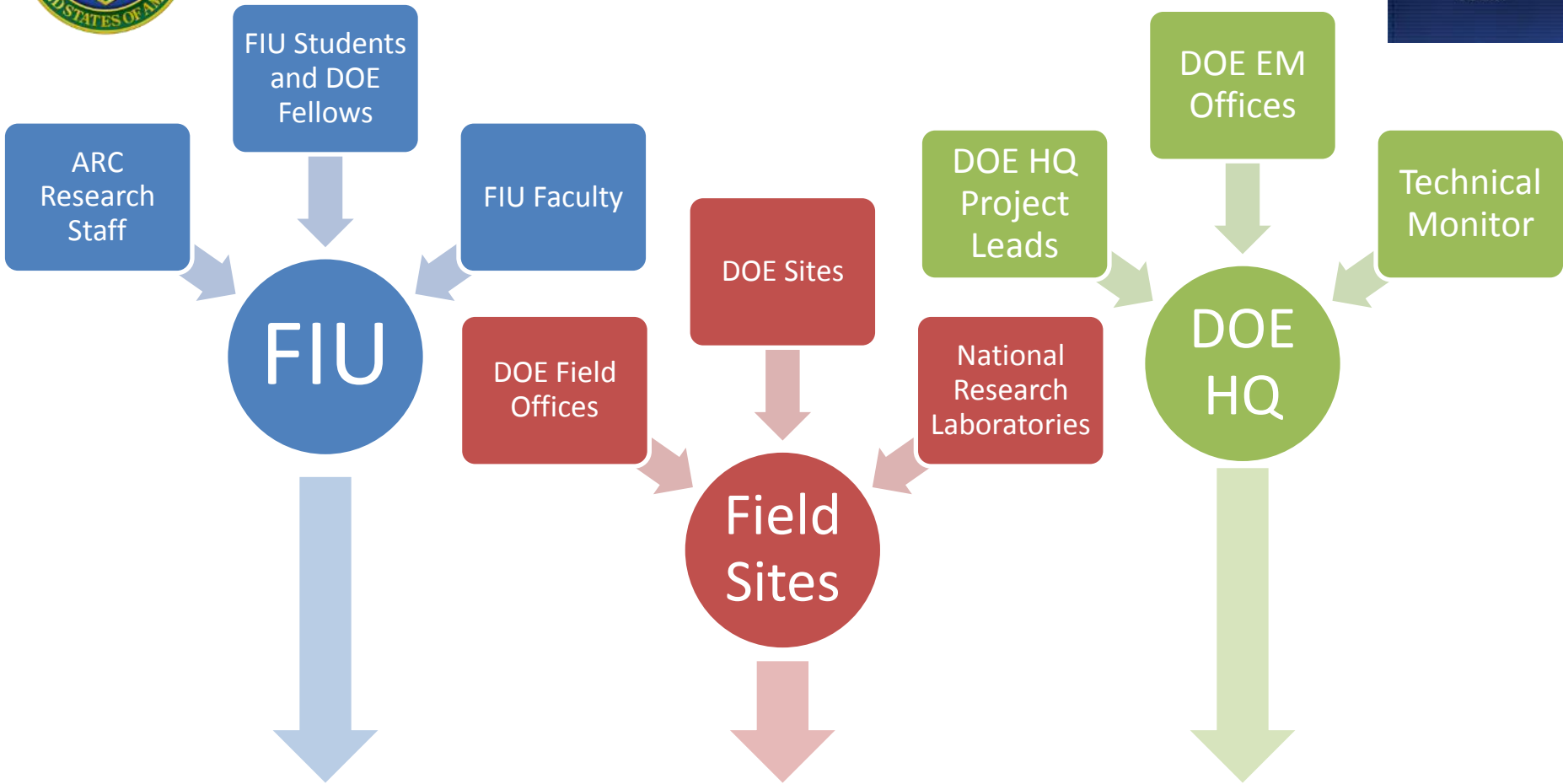


FIU is providing continuing support in research areas that support DOE EM's vision and DOE field site priorities:

- Robotics (e.g., applications in HLW, D&D, etc.) for SRNL and PNNL – FIU has special niche in developing remote systems for HLW applications
- Soil & Groundwater R&D (e.g., Tc-99, iodine, co-contaminants) for PNNL, SRNL, and LANL
- High Level Waste for Tank Farm, PNNL, and WRPS
- D&D Technology Testing & Evaluation for SRNL and other sites
- Waste and knowledge management systems for EM (KM-IT and WIMS) for all DOE field sites and HQ
- STEM Student Workforce Development & Training (DOE Fellows) for DOE and contractor future workforce



Cooperative Agreement Team

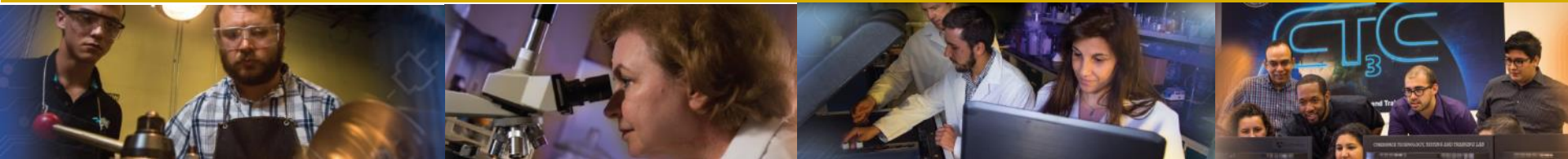


DOE-FIU Cooperative Agreement



FIU Project 4 – DOE-FIU Science and Technology Workforce Development Program

Dr. Leonel Lagos





Program Description

FIU's Applied Research Center (ARC) and the US Department of Energy's Office of Environmental Management have established a workforce development program for the training of FIU STEM, minority students in an effort to create a "*pipeline*" of scientists and engineers that will enter DOE's workforce upon completing their degrees and research at FIU.



Project 4 – Recent Performance Highlights

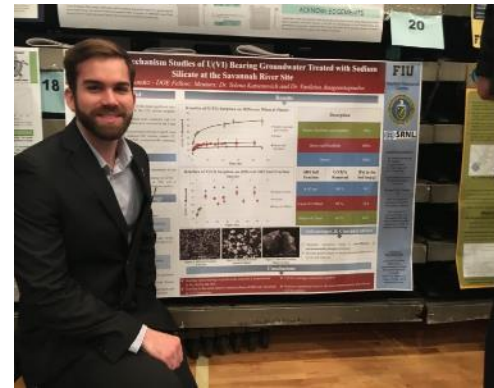
Objective

To help address DOE's future workforce needs by creating a pipeline of minority engineers specifically trained and mentored to enter the DOE workforce in technical areas of need.



Results

- 17 DOE Fellows attended WM17 and presented technical posters.
- 12 DOE Fellows participating in summer 2017 internships.
- DOE Fellow Christine Wipfli completed a one year internship at IAEA.
- Two former DOE Fellows hired by DOE national labs.





DOE Fellows Hands-On Research at FIU





Project 4 – Scope for Current Performance Year



Active hands-on research assisting ARC scientists/engineers during the execution of DOE-EM research - integrating education with practical experience in the DOE EM problem areas (DOE Fellows model).

- Recruitment of new DOE Fellows
- Assignment to DOE EM research
- Poster exhibition & competition
- Annual DOE Fellows induction ceremony
- Summer internship program
- Summer internship technical reports
- Conference participation & presentations
- DOE Fellows lecture series forum
- DOE EM HBCU collaboration/interactions
- Career opportunities
- DOE EM student competition





Program's Components

- Paid 10-week summer internships at DOE national laboratories, DOE sites, DOE-HQ or DOE contractors, working under the supervision of DOE scientists (mentors).
- Paid 20 hours/week Student Research Assistantship at ARC during school year.
- Research experience with ARC scientists at FIU during school year: one-on-one mentoring performing **hands-on** DOE-related applied research.
- Tuition waiver for graduate studies (Master, PhDs) provided by FIU.
- 2 to 4 years Developmental Training Program (depends on masters or PhD track).
- DOE Lecture Series and technical seminars.
- Participation in conferences/workshops.



Graduate Degrees Based on DOE EM Research



DOE-EM based research on the Cooperative Agreement projects are the basis of master's degree thesis and PhD dissertations completed or currently in progress (DOE Fellows & graduate research assistants).





Graduate Thesis / Dissertations Directly Supported by Research Performed under the Cooperative Agreement - Current



DOE Fellow	Exp. Degree	Major	Topic of Research
Alejandro Garcia	M.S.	Geoscience	The Influence of Microbial Activity on The Corresponding Electrical Geophysical Response After Ammonia Injections In The Vadose Zone
Claudia Cardona	Ph.D.	Civil engineering	Evaluating the effects of Si and Al concentration ratios on the removal of uranium
Hansell Gonzalez	Ph.D.	Chemistry	Study of Unrefined Humic Substances As A Potential Low-cost Remediation Method For Acidic Groundwater Contaminated With Uranium
Juan Morales	M.S.	Public Health	Accumulated Metalloestrogens Analysis for Health Risk Assessment and Watershed Toxicology Management in Tims Branch, Savannah River Site, Aiken, S.C.
Maximiliano Edrei	M.S.	Mechanical Engineering	Computational Fluid Dynamics Modeling of Pulse Jet Mixing (PJM) process for HLW in Waste Tanks at Hanford Site
Mohammed Albassam	M.S.	Envr. Engr.	TBD
Natalia Duque	M.S.	Water Resources Management	Modeling of Surface Water And Sediment Transport In The Tims Branch Ecosystem – Graduated
Robert Lapierre	M.S.	Chemistry	Characterization of the uranium-bearing products of novel remediation technologies – Graduated
Sebastian Zanolongo	Ph.D.	Computer Science	Development of Robotic Inspection Tools For DST Primary Tanks
Silvina Di Pietro	Ph.D.	Chemistry	Investigation of NH ₃ Partitioning In Relevant Hanford Minerals and Synthetic Porewater



DOE Fellows Induction Ceremony



A total of **131 FIU minority STEM students** have been inducted as DOE Fellows.

Conducted a total of 10 Induction Ceremonies since program inception in 2007.





DOE Fellows at Conferences



FIU Booth at WM17

Won **one (1)** Best Professional Poster and **five (5)** Best Student Posters at Waste Management Symposia since 2008.



Best Student Poster WM15

Presented over **205** papers and posters at Waste Management (2008-2017) and other national/international conferences, including two **(2)** presentations at ICEM13 (Brussels, Belgium), and **5** at ANS conferences.



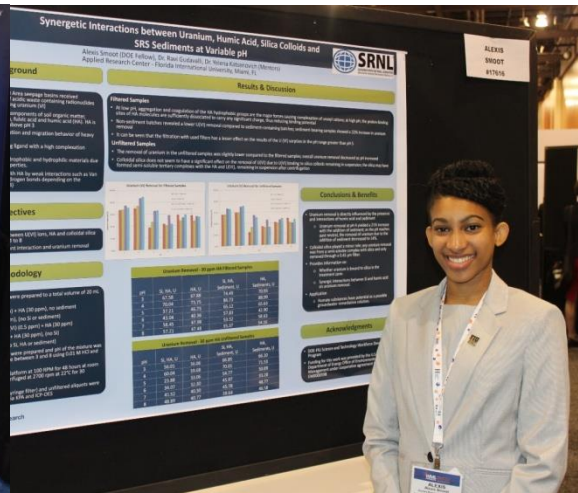
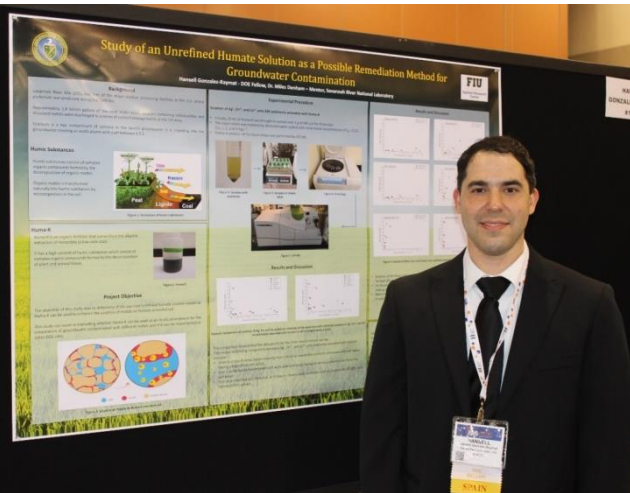
Young Professionals Panel at WM17



DOE Fellows at WM17



DOE Fellow Alejandro Hernandez awarded 2017 Roy G. Post Foundation Scholarship





DOE Fellows Poster Exhibitions





DOE Fellow Internships



120 internships at DOE sites, DOE national labs, DOE-HQ, and DOE contractors across the DOE Complex through summer 2017



DOE Fellow Internships



- 26 DOE EM HQ
- 21 ORNL / Y-12 NSC
- 22 SRS/SRNL/SREL
- 16 PNNL
- 11 Hanford/ORP/WRPS
- 6 DOE Contractors
- 4 INL
- 2 DOE Oak Ridge
- 2 NETL
- 2 LANL
- 2 Sandia
- 1 Moab
- 1 IAEA
- 1 WIPP
- 1 LLNL
- 1 University of Texas – Austin
- 1 San Jose State University



Summer 2017 Internships



Site	Mentor(s)	DOE Fellow(s)
DOE-HQ	Skip Chamberlain	Juan Morales and Mohammed Albassam
DOE HQ	Robert Seifert	Christine Wipfli
SRNL	Dan Kaplan	Sarah Solomon and Ripley Raubenolt
SRNL/SREL	Brian Looney/John Seaman	Ron Hariprashad
Sandia	Jake Deuel	Sebastian Zanlongo
Sandia	Kristopher Klingler	Andres Cremisini
UT - Austin	Mitch Pryor	Michael Di Bono
SRNL	Aaron Washington / Connor Nicholson	Alex Piedra
San Jose State*	David Robertson / Annalise Van Wyngarden	Alejandro Hernandez
WIPP	Tim Dittrich	Francis Zengotita

* This internship was funded by the Office of Science via the radiochemistry summer boot camp program at San Jose State University.



IAEA Internship

Christine Wipfli

March 2016 - March 2017
IAEA Division of Nuclear Fuel
Cycle & Waste Technology
Vienna, Austria



DOE Fellow Christine Wipfli completed a prestigious one-year internship at the International Atomic Energy Agency (IAEA) in the Division of Nuclear Fuel Cycle & Waste Technology in Vienna.



Annual DOE Fellows Poster Exhibition



10 DOE Fellow Poster Exhibitions held at FIU since 2007. 157 research posters have been presented at this event.



DOE Fellow - DOE National Labs Day on the Hill – September 2016





Getting Them Hired



- **9** Fellows hired by DOE, DOE national labs, and DOE contractors.
- **13** Fellows hired by other federal, state, and local gov't agencies (Dept. of Defense, NASA, Dept. of Commerce, Dept of the Navy (NAVSEA), etc.).
- **60** Fellows hired by private STEM industry (GE, Lockheed Martin, Raytheon, Texas Instruments, Motorola, Florida Power & Light, Boeing, Inter Corporation, MWH Global Inc., and others).
- Graduation rate of DOE Fellows - 99%





Tracking the DOE Fellows



DOE Fellows	Number	Cumulative
Hired by DOE	9	9
Hired by other government agencies	13	22
Hired by STEM Industry	60	82
Graduated – employment not known	4	86
Pursued graduate degrees at other universities	7	93
Left program before completing	16	109
Currently participating in the program	22	131



Merlin Ngachin

FIUApplied Research
Center

Former DOE Fellow, **Mr. Merlin Ngachin (DOE Fellow Class of 2007)**, accepted a position at the Department of Energy's Argonne National Lab as Sr. Health Physicist. Merlin previously held a Sr. Health Physicist position at Waste Control Specialists (WCS), a facility in Andrews County, Texas, that ensures safe and permanent disposal of radioactive waste.



Congratulations
Merlin Ngachin!



Duriem Calderin

FIUApplied Research
Center

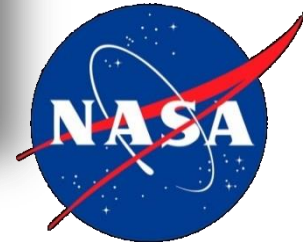
Former DOE Fellow, **Mr. Duriem Calderin (DOE Fellow Class of 2008)**, accepted a position at the Department of Energy's Pacific Northwest National Lab as a Sr. Nuclear Risk Specialist as part of the Risk and Decisions Science Group. Prior to PNNL, Duriem worked for Bechtel, AREVA, and Columbia Energy in Richland, WA.



Creating the Pipeline



Pacific Northwest
NATIONAL LABORATORY



MOTOROLA





DOE Fellows – The Big Picture



DOE-FIU Workforce Development Program

Minority STEM Students

Science, Technology, Engineering, and Mathematics (STEM) students come from majors including: Mechanical Engineering, Electrical Engineering, Computer Engineering, Environmental Engineering, Civil Engineering, Chemistry, Computer Science, and Mathematics.

#1 in nation in awarding bachelor's and master's degrees to Hispanic students.

55,000 Enrolled in Fall 2015

5th largest U.S. public university by enrollment

FIU's Applied Research Center DOE Fellows Research

Major Research Areas:

4

- Tanks and High Level Waste
- Deactivation and Decommissioning
- Soil and Groundwater
- Information Technology

DOE Fellows Stats

131 FIU STEM students inducted since 2007

47 Undergrad DOE Fellows continued to receive Master or Ph.D. degrees at FIU or other institutions

10 Ph.D Degrees **37** Masters Degrees

DOE Fellows Knowledge Transfer

Assisted in publishing

12 Technical papers in peer-reviewed journals

13 Lessons Learned and Best Practices related to D&D

172 Poster presentations at Waste Management Symposia and other national/international conferences

5 Awards for Best Student Poster

Award for best Professional Poster **1**

108 DOE Fellows Internships since 2007

Locations	Benefits
4 DOE Sites	Hands on training
3 National Labs	Prof. Development
4 DOE Contractors	Federal Culture
DOE Headquarters	Networking

7 States

108 Internships

98% Hiring Rate* After Graduation

*This number is based on 82 Fellows out of 84 that have completed the program and joined the STEM workforce immediately upon graduation. 26 students are currently in the program, 6 graduated FIU and pursued graduate studies at other universities, and 15 left the program before graduating FIU.

I am grateful to have been part of this program and the many values I learned throughout. Never will I forget my roots.

Dennis Cavella, DOE Fellow - Class of 2012
Transportation Designer at HDR

DOE EM has benefited tremendously from our partnership with FIU. The culture of the DOE Fellows are top-notch, especially in the STEM disciplines, in meeting our mission objectives.

Shelby C. Ball, EM '10 Acting DAS
DOE Environmental Management

Tomorrow's Workforce

9 Students hired by DOE, national labs, and DOE contractors

13 Students hired by federal, state, and local government agencies

60 Students hired by private STEM Industry

A "pipeline" of minority engineers specifically trained and mentored to enter the Department of Energy workforce in technical areas of need.

More info at <http://fellows.fiu.edu> Revision Date: Feb 23, 2017



Program Website and Facebook



<http://fellows.fiu.edu>

Follow us on Facebook at:

FIU Science and Technology Workforce Development Initiative

DOE Fellows
 IE Fellows at Florida International University

News & Events

DOE/FIU Science & Technology Workforce Development Initiative

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 - Program Fact Sheet
 - The Big Picture
 - Apply to the Program
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Become a **DOE Fellow** and make a difference

Fall 2015 Enrollment
 September 1-25, 2015

Fall 2015 Recruitment

DOE-FIU Science & Technology Workforce Development Program accepts applications three times per year at the beginning of each semester. If you are interested, please download the application form and mail, [...]

Message from the Program Director

I wanted to let you know about an incredible opportunity made possible to FIU minority students thanks to the sponsorship and funding of the Department of Energy's Office of Environmental Management (DOE-EM). In an effort to overcome the challenges of an aging workforce DOE-EM is actively and aggressively targeting college students across the US to enter DOE's workforce.

[Continue Reading](#)

The DOE Fellows Experience Video

DOE Fellows 2015

Testimonial

I am grateful to have been part of this program and the many values I learned throughout. Never will I forget my roots. You do an amazing job Dr. Leonel Lago!!!

Dania Castillo, (DOE Fellow - Class of 2012) now a Transportation Designer at H



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FIU Science ... 188 likes

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188 likes 3 visits

The Iceberg Illusion - GANAS IIIII

Success is an iceberg

WHAT PEOPLE SEE

SUCCESS!

WHAT PEOPLE DON'T SEE

Persistence

Failure

Sacrifice

Disappointment

Dedication

Hard work

Good habits

Like Comment Share

Silvina A. Di Pietro likes this.



Tasks for FIU Performance Year 8

Active hands-on research assisting ARC scientists/engineers during the execution of DOE-EM research - integrating education with practical experience in the DOE EM problem areas.

- Recruitment of qualified talented FIU minority STEM students
- Engage in DOE EM research (Projects 1, 2, 3)
- Poster exhibition & competition (October 2017)
- Annual DOE Fellows induction ceremony (November 2017)
- Summer internship program
- Summer internship technical reports
- Conference participation & presentations, including WM Symposia 2018
- DOE Fellows lecture series forum
- DOE EM HBCU collaboration/interactions
- Extend recruitment to include HBCU/MSI students interested in PhD at FIU
- Work closely with DOE nat. labs to identify opportunities for PhD students
- Identify extended work assignments for FIU graduate students at DOE nat. labs that can lead to post-doctoral positions