Jackson State University

Richard A. Aló, PhD- Dean
Tuesday, September 27, 2016 - 2:00 p.m.
Florida Agricultural & Mechanical University
Tallahassee, FL

National Aeronautics and Space Administration

NASA
Historically Black Colleges and Universities

Technology Infusion Road Tour
and Minority-Serving Institutions

SAVE THE DATE
FLORIDA A&M UNIVERSITY
September 27 - 29, 2016

To register or to get additional information, please visit:
http://www.osbp.nasa.gov.

CHALLENGING MINDS, CHANGING LIVES
COLLEGE OF SCIENCE, ENGINEERING AND TECHNOLOGY

PROVIDING HIGH-QUALITY EDUCATION IN SCIENCE AND TECHNOLOGY
ADVANCING SCIENTIFIC KNOWLEDGE THROUGH RESEARCH
PROVIDING TECHNICAL EXPERTISE TO BUSINESS AND INDUSTRY

WWW.JSUMS.EDU/SCIENCE
Dr. Carolyn W. Meyers, President

VISION “One JSU” increased partnership capabilities with 4 branches

Public research, urban university, Jackson, MS

> 90 bachelor, master, doctoral degree programs

**Carnegie research-intensive university**

- Enrollment (Fall 2016): 9,528 students
- 6,470 undergraduates; 2,112 graduate students
Research Overview

- One of two (of 105) HBCUs with Carnegie High Research Activity Designation (RU/H)
- Centers of Excellence in:
  - Nano-toxicity (NSF),
  - Translational Research (NIH),
  - Multimodal Transportation (DOT),
  - Ship Systems Engineering (NGC),
  - Environmental Health (NIH),
  - Minority Health & Health Disparities (NIH)
- Members of National Academy of Inventors
Programs of Interest - STEM

- Chemistry:
  Top 3 producers of African-American BS, MS PhD chemists in the nation
  >7 publications per year
  Top 10% nationally among >1,000 in research funding

- Interdisciplinary Research Programs
  Materials Science & Engineering
  Environmental Sciences
  Computational /Data Enabled Science/Engineering

- ABET Accredited Engineering Programs
  Civil Engineering, Computer Engineering, Electrical Engineering,
Programs of Interest – Business

Small Business Development Center
- One-on-one counseling
- Loan packaging
- Seminars and workshops

Leadership Institute for Entrepreneurship
- High school & community college
- Entrepreneurship through leadership
College of Science, Engineering, and Technology (CSET)

Departments
- Aerospace Science
- Biology
- Chemistry & Biochemistry
- Mathematics & Statistical Sciences
- Physics, Atmospheric Science & Geosciences
- Industrial systems & Technology
- Civil and Environmental Engineering
- Electrical and Computer Engineering
- Computer Science

Degrees: BS; MS
- Ph.D. (Chemistry, Environmental Science, Engineering, and (CDS&E) Computational Data-enabled Science and Engineering)
Engineering Programs

Electrical and Computer Engineering

- BS in Computer Engineering (ABET accredited)
- BS in Electrical Engineering (applied for ABET accreditation)
- BS in Biomedical Engineering (New)

Civil and Environmental Engineering
- BS in Civil Engineering (ABET accredited)

Computer Science
- BS in Computer Science (ABET accredited)

Graduate Program
- MS in Engineering
- MS in Computer Science
- MS in CDS&E (Computational Data-enabled Science and Engineering)
- Ph.D. in Engineering
- Ph.D. in CDS&E (Computational Data-enabled Science and Engineering)
Electrical and Computer Engineering students

Summer Internships
- Indiana University
- Engineer Research and Development Center (ERDC)
- Univ. of Florida
- MIT
- Entergy
- NASA
- Lockheed Martin
- Google
- Apple
- ....

Employment
- Raytheon
- General Motors
- Entergy
- Lockheed Martin
- State Farm
- NASA
- L3
- Wal-Mart
- Boeing
- American Airlines
- Union Pacific
- Nissan
- Army Research Lab
- Northrop Grumman

Graduate Schools
- Jackson State University
- Mississippi State University
- Purdue
- U of Southern California
- Washington University in St. Louis
- Louisiana Tech
- Georgia Tech
Vice President for Research and Federal Relations: Dr. Loretta A. Moore: loretta.a.moore@jsums.edu

- Sponsored Program, Grants and Contracts
- Research Compliance, Technology Transfer
- Center for Research Scholar

<table>
<thead>
<tr>
<th></th>
<th>July 2012 to June 2013</th>
<th>July 2013 to June 2014</th>
<th>July 2014 to June 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Research Funding</td>
<td>$28.6M</td>
<td>$26.2M</td>
<td>$27.2M</td>
</tr>
<tr>
<td>State, Industry &amp; Private Research</td>
<td>$07.6M</td>
<td>$02.2M</td>
<td>$02.3M</td>
</tr>
<tr>
<td><strong>Total JSU Research Funding</strong></td>
<td><strong>$36.2M</strong></td>
<td><strong>$28.4M</strong></td>
<td><strong>$29.5M</strong></td>
</tr>
<tr>
<td>College Science Engineering vs JSU</td>
<td>46%</td>
<td>53%</td>
<td>48%</td>
</tr>
</tbody>
</table>
Division of Research and Federal Relations (Cont.)

General Information and Facilities & Administrative Rates
Indirect Cost Rate: 51% of Modified Total Direct Costs
Off Campus Indirect Cost Rate: 28.6%
Fringe Benefit Rate: 32%

Authorized Signatory for Jackson State University:
Dr. Loretta A. Moore Vice President-Research/ Federal Relations
E mail: loretta.a.moore@jsums.edu

Business Official or Financial Officer:
Philissa Conner, Office of Grants and Contracts
P. O. Box 17250, Jackson, MS 39217
Telephone: 601-979-2965
FAX: 601-979-3789 E-mail: phillisa.r.conner@jsums.edu
JSU Engineering Research

Unmanned Aerial Vehicles
High Performance Computing
- Cybersecurity
Environmental Engineering
- Visualization
Computational Fluid Dynamics
Reconfigurable Computing
Electromagnetic & Antenna Design
- Computer Networks
- Engineering Education
- Big Data
- Power Systems
Cybersecurity

- Intelligent Intrusion Detection Systems
- Intelligent Intrusion Prevention Systems
  - Data analytics for analyzing log files - detecting true anomalies
- Reverse engineering of malware
- Tools and techniques for decryption of data and software
  - Intelligent malware – both delivery and software effectiveness including stealth weapons
- Intelligent agents for monitoring configuration
- SCADA and ICS cyber security and vulnerabilities
Visualization

Development of Advanced Visualization Instrumentation for Collaborative Exploration of Big Data *
National Science Foundation MRI subcontract to
–University of California San Diego - Lead
Also University of Texas Medical Branch
Development of the Sensor Environment Imaging (SENSEI) Instrument * National Science Foundation (NSF) University of Illinois at Chicago – Lead
subcontractors:
-Jackson State University
–University of California San Diego
–Scripps Institute of Oceanography
–University of Hawaii at Manoa

32K Visualization Wall
Funded Grants and Contracts

- Reconfigurable Antennas, Clarkson Aerospace, PI: Dr. A. Eldek (Contract)
- Actively Tunable Metamaterials, Lockheed Martin Aeronautics, PI: Dr. A. Eldek (Contract)
- Broadband Antennas and Antenna Arrays for Wireless Communications, Clarkson Aerospace, PI: Dr. A. Eldek (Contract)
- Hardware in the Loop Simulator for Unmanned Aerial Vehicles, NSF, PI: Dr. Kamal Ali
- Experimental Centric Based Engineering Curriculum for HBCU, NSF, PI: Dr. A. Eldek (subcontract from Howard University) *
  - High-Order Space-Time Cell Vertex Scheme for Compressible Navier-Stokes Equations, Air Force Office of Scientific Research, PI: Dr. Tu *
  - Extending the Riemann-Solver-Free High-Order Space-Time discontinuous Galerkin Cell Vertex Scheme (DG-CVS) to Solve Compressible Magnetohydrodynamics Equations, Air Force, PI: Dr. Tu

* indicates active project
Funded Grants and Contracts (cont.)

- Advancing and Integrating Knowledge of Telecommunication Standards into STEM Education, NIST, PI: Dr. El-Bawab *
- High Performance Reconfigurable Computing for Scientific Applications, ERDC (Engineer Research and Development Center), PI: Dr. Abed
- Exploring High Performance Heterogeneous Computing via Hardware/Software Co-Design, Army, PI: Dr. Abed *
- Disaster Response Intelligent System, Oak Ridge National Laboratory – Department of Homeland Security, PI: Dr. Skelton (Contract)
- Database for Relays, Entergy, Dr. Skelton (Contract) *
- Development of a High-Order Riemann-Solver Free Shallow Water Flow Solver on CPU-GPU Heterogeneous Processor 2.0, ERDC (Engineer Research and Development Center), PI: Dr. Tu (Subcontract) *
- Cyber Security/Cyber Warfare, ERDC (Engineer Research and Development Center), PI: Dr. Skelton (Subcontract) *
- Open Loop Testing, Entergy, Dr. H. Lei (Contract) *

* indicates active project
Northrop Grumman Center for HPC of Ship Systems Engineering

Funded projects

- Direct Numerical Simulation of Insect-Size Micro Aerial Vehicles with Flapping Wings, Army
- Development of an Ensemble Modeling System for the Simulation of Realistic Levee Overtopping Flows from Hurricanes, Department of Homeland Security
- Performance Computing Technologies for Modeling the Dynamics and Dispersion of Ice Chunks in the Arctic Ocean, Army
- Large-Scale Simulation of Biological Systems, NSF EPSCOR Research Infrastructure Improvement Grant Program (Subcontract)*
- Director: Dr. Shahrouz Aliabadi. Established in 2005 at e-Center

* indicates active project
Entergy and JSU

- Entergy donated $500K to the Electrical and Computer Department.
- Donation used for laboratory equipment and student scholarships
- JSU has two active contracts with Entergy on protection of power transmission lines
- JSU students have co-op opportunities at Entergy
Mississippi e-Center @ JSU

Incorporated as a 501(c) 3 private foundation 2001

- Info tech multi-use urban research park.
- 192,000 sq.ft located on 29-acres including attractive landscaping, surface parking > 900 cars
- Supports info technology university-based research and learning centers and information technology-based entrepreneur businesses
- Executive Director: Dr. William E. McHenry
  1230 Raymond Rd, Jackson, MS 39204
Mississippi e-Center @ JSU

- MS e-Business Innovation Center (MBIC)
  - Technology business incubator dedicated to assisting new businesses in their development
  - Examples of Business Clients:
    - Impact Image, LLC
    - Eubanks & Associates, PLLC

- Data Center (Tier III), Venture Technology

- The Executive Conference Center
  - Businesses, civic and other groups may reserve the center for their video-conferences, meetings or board gatherings. Phone 601 979 1246

- Academic Units:
  - JSU TV22
  - Executive Ph.D. in Urban Higher Education
  - School of Journalism
Mississippi e-Center @ JSU

- Center for Bioinformatics and Computational Biology (CB²)
- Center for Defense Integrated Data (CDID)
- Center for Business Development and Economic Research (CBDER)
- Department of Homeland Security Coastal Hazards Center of Excellence (CHC)
- Jake Ayers Institute for Research in Higher Education (Ayers Institute)
- National Center for Biodefense Communications
- Northrop Grumman Center (NGC) for High Performance Computing of Ship Systems
- Research Centers in Minority Institutions Translational Research Network (RTRN) Data Technology Coordinating Center (DTCC)
- Science Diversity Center (SDC)
Jackson State University (JSU)

Address:
1400 John R. Lynch St
Jackson, MS 39217

President:
Dr. Carolyn W. Meyers

Web Site:
https://www.jsums.edu/

Accreditation:
Southern Association Colleges and Schools (SACS)