

Jackson State University



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



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

Jackson State University (JSU)- 1877

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

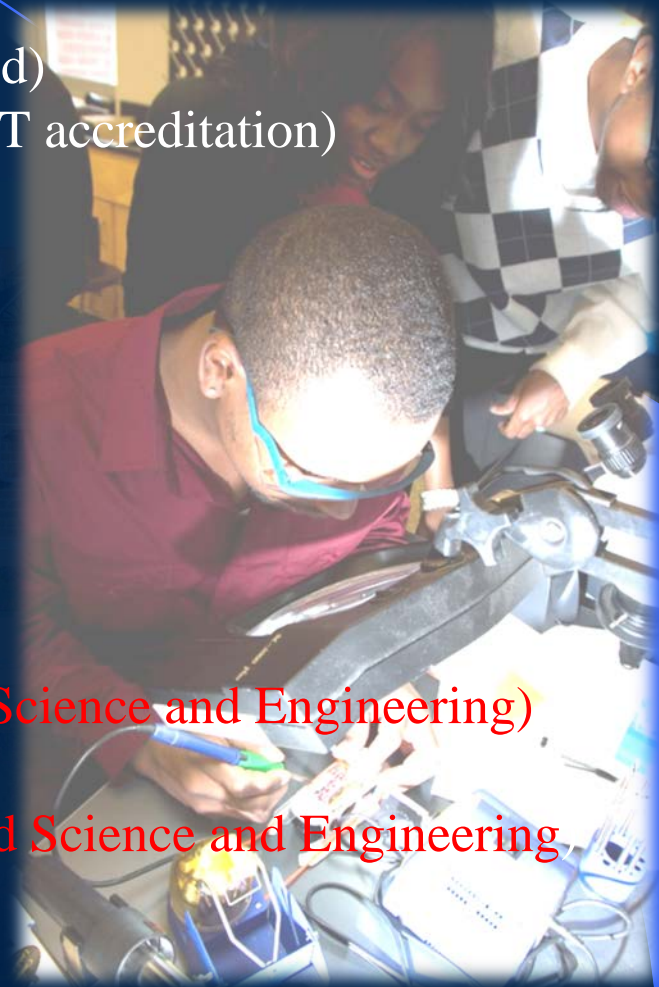
- MS in Engineering

- 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

Division of Research and Federal Relations

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

	July 2012 to June 2013	July 2013 to June 2014	July 2014 to June 2015
Federal Research Funding	\$28.6M	\$26.2M	\$27.2M
State, Industry & Private Research	\$07.6M	\$02.2M	\$02.3M
Total JSU Research Funding	\$36.2M	\$28.4M	\$29.5M
College Science Engineering vs JSU	46%	53%	48%

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

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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) *
- Arbitrarily High Order Space-time Method for Conservation Laws on Unstructured Meshes, Air Force Office of Scientific Research, PI: Dr. Tu
- 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
- Web site: <http://www.msecenter.com/index.html>



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)





Thank

ARE THERE ANY QUESTIONS?

You