



Jackson State University

Capability Statement

DUNS No: **044507085**

Cage Code: **01VJ1**

NACIS ID(s): **611310, 54171, 541713**

SIC: **8221**

Federal EIN No: **64600507**

Certificates, Registrations, Accreditations: **SACSCOC, NCATE; ABET; NSPPAA**

POC Information:

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OVERVIEW

Jackson State University, founded in 1877, is a historically black, “higher research activity” university located in Jackson, the capital of Mississippi. Jackson State’s nurturing academic environment challenges individuals to change lives through teaching, research and service. Officially designated as Mississippi’s Urban University, Jackson State continues to enhance the state, nation and world through economic development, technological, healthcare and educational initiatives. Jackson State is the only comprehensive public university in the metropolitan area.

RESEARCH CAPABILITIES

CENTERS AND PROGRAMS

3-D Printing – JSU has 3-D printing capabilities for both research and training activities. Presently, our innovation spaces are equipped with a total of eleven (11) 3-D printers. We are building upon this capability to ensure that a majority of our faculty and students are trained and fully competent in the use and application of this technology.

Microstructural Analysis – Our civil engineering department teaches courses in structural analysis at the undergraduate and graduate level. The course includes the analysis of statically determinate and indeterminate structures for fixed and moving loads; equations of equilibrium and compatibility; influence lines, and shear and moment envelopes; analysis of forces and deflections in structures by methods of moment distribution; consistent deformation, and virtual work; computer analysis of structures; and real life examples.

Partnerships in Research and Education in Materials (PREM) Program, JSU is providing the resources to train minority students and establish faculty collaborations in new areas of materials research, with a host of new and best-practices educational activities. The goal is to broaden the capacity of JSU in materials research, thus contributing to the diversity of the scientific workforce and research and education in materials science.

Technology Transfer and Commercialization – facilitates the development, disclosure and protection of intellectual property; develop, coordinate and conduct training on IP policies and technology transfer best practices; facilitate the licensing and commercialization process; facilitate MTAs, NDAs, MOUs, Teaming Agreements, and IIAs in the best interest of the university and its researchers.

The Strategic Cyber Science Warfare Security Application Development and High Performance Computer Research Center was established in partnership with the Engineer Research and Development Center (ERDC), which is part of the U.S. Army Corps of Engineers. The \$6,000,000 joint effort includes research in cyber warfare, cyber defense, high-tech computational research and analysis, development of technical measurement involving high-performance computing, energy management and even development of Internet apps.

RCMI Translational Research Network-Data Technology and Coordinating Center (RTRN DTCC) provides a secure website; data management and data sharing tools; staff, hardware and software for collection, analysis, storage and exchange of clinical data for the multi-site studies.

CREST Interdisciplinary Center for Nanotoxicity (ICN) develops new approaches to the practical applications and toxic effects of nanomaterials on living organisms. Beyond its contributions to scientific knowledge, the ICN at JSU has established a diverse community of researchers, educators and students who are changing the research landscape.

SELECTED EXPERT AREA

Biomedical Research: Cancer research, anti -cancer pro-drugs for the treatment of cancers, macroscopic Raman imaging system for dental caries detection, Salmonella detection and killing.

Chemistry: Medicinal chemistry of infectious diseases, biochemistry and biophysics (drug target identification and cheminformatics-based bioactive ligand discover, and natural products chemistry, computational modeling, chemical sensor for nerve agents, nanomaterials and polymeric materials for targeting delivery of anti -cancer drug, nmaterials research.

Mathematics/Computer Science: Cybersecurity, Maritime Port Security, Cyber Warfare, National Intelligence, Data Analytics, Artificial Intelligence, High Performance Computing and Visualization, GIS and Remote Sensing, Computer Technology and Networking, Computer/Digital Forensics, Intelligent Malware, Data and Software Decryption, and EXTREEMS-QED Research.

Physics/Engineering: Electrical and Systems Engineering, Machine Learning and Data Mining, Software Engineering, Computer Architecture, Smart Structures and Structronic Systems, Computer Simulation and Modeling, Electromagnetics and Power Systems, Computational and Data Enabled Science and Engineering, and Numerical Water Quality and Contaminant Modeling.

Autonomous Systems: Unmanned Aerial Vehicles, Autonomous Platform Vehicles, Sensors and Electronics Instrumentation, Mechatronics and Robotics, and Application of Geological Information System.

Health Disparities: HIV/AIDS, Cardiovascular Health, Stroke, Diabetes, Mental Health, Obesity, Asthma, Suicide Prevention, and Substance Abuse.

Hardness Testing: Electromagnetic Testing, Ultrasonic Testing, Indentation Testing, Rebounding Testing, and Erosion Tests.

Nanoparticle Characterization: Spectroscopic Analysis, Transmission Electron Microscopy, Dynamic Light Scattering, Dark Field Microscopy, Atomic Force Microscopy, Raman Spectroscopy etc.

FACILITIES

Collaborative Learning and Research Center (ERDC-CLRC) - This Center is focused on conducting research and development (R&D) in the areas of Computational and Data Enabled Sciences and Engineering (CDS&E), including the modeling of cyberspace (cyber warfare and security), mobile application development, and improving high performance computing applications using advanced machine architectures. JSU faculty/students and U.S. Army Engineer Research and Development Center (ERDC) employees work collaboratively at the Center.

Center for Innovation and Entrepreneurship/Machine Shop – 3-D Printing, Lean Startup (NSF-JSU I-Corps Site), Makerspace, Small Business mentoring, tech transfer and commercialization support, business plan development, new venture competitions, and more.

Multiuser Core Facilities - Analytical, Animal, Biostatistics & Bioinformatics, Molecular & Cellular Biology, Molecular Magnetic Resonance cores.

SELECTED PAST PERFORMANCES

National Institutes of Health

- NHLBI - Prime Contractor: Jackson State University. Contract# HHSN268201300049C (Jackson Heart Study Graduate Training and Education Center)
- NHLBI - Prime Contractor: Jackson State University. HHSN268201300050C (Jackson Heart Study Community Outreach Center)
- NIH/National Library of Medicine – Prime Contractor: Jackson State University. Contract# HHSN276201200682P (NLM EnHIP 2012 Outreach Award)

U.S. Department of Energy

- Prime Contractor: Savannah Nuclear River. Contract# DE-AC09-085R22470 (Evaluation of Low Lying Plants in Erosion Control for Hg Contaminated Floodplain Soils).
- Prime Contractor: UT Battelle. Task Order#4000079874 (Development of Prototype Toolset Phase 2)

U.S. Airforce

- Prime Contractor: Universal Technology Corporation; Sub-Contractor: Clarkson Aerospace Corp. Contract# FA 8650-13-C-5800 (AFRL Collaboration Program – Sensors Research)
- Prime Contractor: Universal Technology Corporation; Sub-Contractor: Clarkson Aerospace Corp. Contract# FA 16-S7700-03-C2 (AFRL Collaboration Program – Materials and Manufacturing Research)
- Prime Contractor: Universal Technology Corporation; Sub-Contractor: Clarkson Aerospace Corp. Contract# FA 8650-13-C-5800 (Minority Leaders Program, Cyber-Security Research for Distributed Sensor Systems and Cloud Computing Applications)

U.S. Department of Army

- Army Corps of Engineers - Prime Contractor: Jackson State University. Contract# W912HZ-15-2-0001 (Cybersecurity, High Performance Computing, and Data Analytics).
- Prime Contractor: Jackson State University. Contract# W912HZ-12-D-0001 (Students Summer Research Internship Program)
- Prime Contractor: Jackson State University. Contract# W912HZ-10-C-0107 (High Performance Computational Design of Novel Materials)
- Prime Contractor: ERDC. Contract# W912HZ-12-P-0087 (Numerical Water Quality and Contaminant Modeling)
- Prime Contractor: Jackson State University. Contract# W912HZ-16-2-0021 (Biogeochemistry Of Depleted Uranium In Rang Soils Controlling Its Fate/Migration And Developing Coupled Electrokinetic-Phytoremediation Technology)

U.S. Department of Homeland Security

- Prime Contractor: Jackson State University. Cooperative Agreement# 2008-ST-061-ND0002-07 (Center of Excellence, Analysis Response for Coastal Hazards)

Office of Naval Research

- Prime Contractor: Jackson State University. Contract# N00014-13-1-0501 (Probing Materials for Efficient Hydrogen Storage and Search for Materials Characterized by High Tensile Strength)

NASA

- Prime Contractor: Jackson State University. Cooperative Agreement # NNX10AB49A (NASA Innovations in Climate Education (NICE))
- Prime Contractor: University of Mississippi. Subcontract #NNX15AH78H (NASA Space Grant thru the Space Grant Consortium)
- Prime Contractor: Brandan Enterprises Inc. Subcontract #NNX14AT6OH (MUREP)