

Bowie State University Capability Statement

Institution: **Bowie State University**

DUNS No: **616163721**

Cage Code: **3KBS8**

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Federal EIN No: **52-6002033**

Certificates, Registrations, Accreditations: ***Middle States Commission, ABET, NCATE, National Center of Excellence for NSA & DHS.***

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OVERVIEW

Founded in 1865, Bowie State University (BSU) is a public comprehensive institution and the first Historically Black College and University (HBCU) established in the State of Maryland. With a population of over 6,100 students, BSU is committed to providing students with educational experiences that prepare them to successfully become future leaders and innovators in their field of interest. The University is also the site of the first Maryland business incubator to be established at an HBCU, the Bowie Business Innovation Center (Bowie BIC), which provides business support services and facilities that help companies survive and grow during their start-up period. A centerpiece of BSU's success lies in the area of science, technology, and education. The National Security Administration (NSA) and the Department of Homeland Security (DHS) has designated BSU as a Center of Academic Excellence in Information Assurance Education since 2011. In addition, to ensure that a higher number of students seek and complete advanced quality education in Science, Technology, Engineering, and Mathematics, a new 149,995 square feet Natural Sciences, Mathematics and Nursing building opened in summer 2017, to support teaching and research in STEM. This state-of-the-art building includes 23 Science teaching labs, 15 classrooms, 6 science research labs, 6 shared flexible classroom spaces, 82 academic offices, an informal student gathering space, a greenhouse, and a nursing skills simulation suite.

CAPABILITIES

Biomedical Research/Biology: Bioinformatics, Botany, Aging effects on muscle mass; Plant Metabolomics, Physiology, Ecotoxicology; genetics; Plant Genomics, Germplasm Analysis, Research on special habitats, DNA Fingerprinting and DNA Barcoding

Chemistry: Organic/Synthetic Chemistry, Chemistry; design and synthesis of anti-cancer, anti-microbial and broad-spectrum anti-viral compounds; design and synthesis of biologically active small molecules with medicinal applications; developing imageable small molecules to be used for drug delivery

Mathematics/Computer Science/Information Systems: Security in wireless and data networks, parallel algorithms and high-performing computing, embedded systems, robotics, programming languages, data mining, intrusion detection, data privacy, artificial intelligence, machine learning, natural language processing and cognitive agents, operating systems, networks and software engineering, image processing, image compression, super resolution, neural networks, pattern recognition; application development and technology support services

Forensic Science: Security and forensics in small-scale, wireless, mobile devices, computer forensics and cybersecurity

Psychology/Behavioral Sciences/Social Services/Criminal Justice: clinical and health psychology, brain-based learning, bio-feedback and psychophysiological analysis of depression and anxiety disorders; comparison analysis of how learning occurs; social services and social work training and research for adults, children and families; program evaluation; criminal justice research and services, ex-offender services and training ; sexual assault prevention and victim advocacy services; alcohol and drug prevention services; HIV family services research; adult caretakers research

Business/Management Information Systems: financial market microstructure, marketing solutions and training, entrepreneurship, economic analysis, forecasting, and processing; international economics, safety and risk management, project management; business development training; web development, data analytics, and mapping services

FACILITIES

Makers' Space- Stratasys uPrint SE Plus with Support Cleaning Apparatus, PrintrBot Simple with Heated Bed, Ultimaker 2, NextEngine Desktop 3D Scanner, Universal Laser Systems Desktop VLS 3.50 (Laser Cutter) with Fume Extraction Apparatus, General CNX iCarver 40-915X CNC with Stand, SMI Eyetracking System.

Virtual Reality Laboratory- This laboratory applies cutting-edge VR technology currently available in academia and industry. In addition, the lab allows robotics experimentation and research in Multi-agent systems for evacuation. The current projects in the Virtual Reality Laboratory focus on evacuation simulation, way finding, modeling emergency scenarios, virtual museum, Multi-user gaming environments, and online VR classroom.

Laboratory for Information and Infrastructure Security and Assurance/ LUCID & K-20 Workforce Development-

The Laboratory for Information and Infrastructure Security and Assurance (LIISA) provides students with state-of-the-art-technology equipment and software to both attack and defend target computer networks in a secure environment. (LUCID) through the use of a secured flexible and scalable VMware management network, teams launch attacks and defend against intrusions during cybersecurity competition exercises. (K-20 Workforce Development) implements best practices and software design for Cloud base infrastructure and the utilization.

Biotechnology Core Laboratory- DNA Microarray, global gene expression, cellular/ biological imaging & analysis, Quantitative Gene Express, Microarray Verification, Quality control and Assay Validation, Pathogen Detect, SNP Genotyping, MicroRNA Analysis, Viral Quantification through both Real-Time PCR and Thermal Cycle PCR.

Other Major & Specialized Instrumentation- Scanning Electron, Florescence, Infrared, NMR, UV/Vis Microscopy, High speed centrifugation, Particle Size Analyzer, Vector Network Analyzer, Flow Cytometer, Atomic Absorption Spectroscopy, GC-Mass Spectroscopy

SAMPLE GRANTS

Heath Research Services Administration (HRSA)- Behavioral Health Workforce Education and Training (Dr. Cubie Bragg): This project aims to pair experiential learning for master's level counseling students with Mission Peer Recovery Training, preparing persons to serve as Certified Peer Recovery Specialists and Registered Peer Specialists. (\$1M; 9/30/17-8/31/21)

National Nuclear Security Administration (NNSA) sub-award with Norfolk State University - K-20 Cybersecurity Pipeline (Dr. Lethia Jackson): This project aims to develop a pipeline for K-20 workforce specifically trained to address realistic security problems experienced by NNSA laboratories in particular, U.S. government agencies, and the private industry in general. (\$1.5M; 10/1/14 to 9/30/19)

National Science Foundation (NSF) - Education Innovation Initiatives - Ecosystem for Student Success at BSU project (Dr. Aminta Breaux, Dr. Guy-Alain Amoussou, Dr. George Acquah): The project is working to transform the first two years of STEM teaching and learning by providing support interventions: by building student learning communities, providing career-related mentoring and undergraduate research learning opportunities; to integrate problem-solving and entrepreneurship in the STEM curriculum, and expanding access to a maker space to support students' multidisciplinary learning; and to provide professional development to faculty on experiential learning and evidence-based instructional practices. (\$1.14M; 9/1/2015 to 8/31/18)

SAMPLE CONTRACTS AND COOPERATIVE AGREEMENTS

Army Research Laboratory Micro Autonomous Systems and Technology (MAST) Collaborative Technology Alliance/BAE Systems (Dr. Darsana Josyula) W911NF-08-2-004- active: Project provides remote sensing research and development support.

National Aeronautics and Space Administration (NASA) GSMO II / Harris / BSU; NNG09DA01C

(GSMO) Ground Systems and Mission Operations Program Management Support. Space Network Engineering Summer Intern-Provides support to the Data Access System Sustainment (DAS-S) effort. (Dr. Anika Bissahoyo, Director ORSP; Jen Zhou & Ann McCleary-Heron Sr. Subcontract Administrator).