

Claflin University Capability Statement

Institution: Claflin University; DUNS No: 0147781580000; Federal EIN No: 57-0314374

Certificates, Registrations, Accreditations: Southern Association of Colleges and Schools (SACS), South Carolina State Board of Education, American Chemical Society (ACS), National Association of Schools of Music (NASM), Association of Collegiate Business Schools and Programs (ACBSP).

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OVERVIEW

Claflin University's historic 46-acre campus is located in Orangeburg, South Carolina, a city of approximately 14,000 people about forty miles south of Columbia. Claflin University has a population of approximately 2000 undergraduate and graduate students from 45 South Carolina counties, 24 States, and 11 countries. The student-faculty ratio is 13 to 1, with 83% of the faculty holding terminal degrees in their fields. The University offers broad based education in liberal arts and sciences combined with internships and other career-focused programs. The University offers 36 undergraduate majors and three graduate majors.

The School of Natural Sciences and Mathematics (SNSM) is comprised of three departments offering 13 undergraduate majors and the MS in biotechnology. The departments are Biology, Chemistry and Mathematics and Computer Science. The SNSM seeks to prepare and graduate a diverse cohort of students of nationally competitive merit and leadership potential to meet the entry requirements for graduate and professional school and the workforce. The schools programs of study also include a program leading to certification as a high school mathematics teacher, dual-degree programs in engineering, engineering technology, the Masters of Public Health and the Pharm-D degree and the Master of Biotechnology degree. The Chemistry Department is accredited by the American Chemical Society (ACS), and the School is home to the South Carolina Center for Biotechnology.

RESEARCH CAPABILITIES

CAPABILITIES	
DEPARTMENT OF BIOLOGY	Evaluation of Plant Species as Potential Biofuel Feedstock with Maximal Energy Yield, Defensive, Physiological, and Ecological Roles of Phytochemicals, Prostate Cancer Research, HIV/AIDS Research, Virology & Immunology of HPV, HCV, HBV, HIV and GBVC, Diabetes, Autism, Health Disparities, Breast Cancer, Genotyping and DNA Sequencing, Biofuel from Cellulosic Biomass, Plant-made Malaria Vaccine in Tomato, Development of Cold-Tolerant Sugarcane as an Alternative Feedstock for Biofuel, Development of Biochemical Markers to Combat Resistance to Biotic Stresses in Watermelon, Developing and

	Applying New Methods and Technologies in Forensic DNA and Serology Protocols, Interaction Between <i>M. catarrhalis</i> and the Innate Immune System, Bioremediation, Mental Health Awareness.
DEPARTMENT OF CHEMISTRY	New Approaches to Inhibiting the Production of Cancerous Cells by Targeting Thymidylate Synthase, Detection and Remediation Response to Chemical Weapons of Mass Destruction, Study of the Intermolecular Interactions in Solution Phase Using the Combination of FIIR and NMR, Quantum Mechanical Calculations Performed by Gaussian 09, Study of the Thermodynamics in Hydrogen/Halogen Bonding or DNA Related Binding System using Isothermal Titration Calorimetry (ITC), Solid State Chemistry (Synthesis and Characterization of New materials), Single Crystal Growth Perovskites as Solid Oxide Fuel Cell Components, Synthesis and Characterization of Hydrogen-Bonded Adducts, Synthesis and Characterization of Main-Group Inorganic-Organic Hybrid Materials, Biological Weapons Antidote, Synthesizing Novel Metal Organic Frameworks and Metallosupramolecules, Environmental Remediation of Mercury, Chromium, and Chlorinated Solvents, and Identifying the Changes in Metabolic Profiles due to Various Stimuli (e.g., Disease Development, Infection, Temperature Changes, Nutrient Availability).
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE	Cybersecurity, Scientific and Engineering Applications, Mathematical Software Design, Computer Vision, Machine Learning and Pattern Recognition, Investigation of a Broad Range of Thermodynamic Heat Engine Applications, Dynamic Optimization, Differential Game, Computations, and Geometric Mechanics.
Granting Agencies	Department of Defense, National Nuclear Security Administration, Department of Energy, Department of Education, National Science Foundation, National Institutes of Health, Defense Advanced Research Projects Agency, and NASA.

FACILITIES

James S. Thomas Science Center: Lecture classrooms and Teaching and Research Laboratories. The **SC Center for Biotechnology Core Laboratory**- is also located in the James S. Thomas Science Center.

Major & Specialized Instrumentation- The lab has a DNA Microarray, SNP Genotyping, MicroRNA Analysis, Viral Quantification through both Real Time PCR and Thermal Cycle PCR among other equipment.

The Molecular Science Research Center (MSRC): The MSRC is a state-of-the-art research facility that has been designated as a CORE Research facility for the state of SC.

Major& Specialized Instrumentation- *The research equipment includes a Molecular Virology facility with an Imaging Suite, Sequencing Suite and a Tissue Culture Laboratory. It has a Spectroscopy Laboratory, Electron Spin Resonance Laboratory, X-Ray Diffractometer Laboratory and two NMR rooms (300 MHz and 700 MHz). The Chemistry faculty offices and research labs are located in the MSRC*

PAST PERFORMANCE

The SNSM has had research grants with the Department of Defense, National Nuclear Security Administration, Department of Energy, Department of Education, National Science Foundation, NASA and National Institutes of Health.