



Clayton State University Capability Statement

Institution: **Clayton State University**

UEI No: **JDPQA8949685** Federal EIN No: **58-1048855** Cage Code: **1PUU2** SIC: **8221**

NAICS ID(s): **611310, 813211**

Certificates, Registrations, Accreditations: **SACSCOC, CCNE, CODA, AUPHA, AACSB, ADA, CAAHEP, NASM, ABA**

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OVERVIEW

Clayton State University is an MSI with 83.4% minority enrollments. Clayton State University cultivates an environment of engaged, experience-based learning, enriched by active community service, that prepares students of diverse ages and backgrounds to succeed in their lives and careers. Through a distinctive combination of proven and innovative methods of teaching and learning, Clayton State University will excel in preparing students from many walks of life to meet the challenges of living and working in a dynamic, global society. Clayton State University empowers students through rich experiences that engage their critical-thinking skills and prepares them for their chosen careers. The people at Clayton State University bring a rich diversity of backgrounds, perspectives, and goals.

RESEARCH CAPABILITIES

Mathematics/Computer Science: Algorithm development, combinatorics, math modelling, software engineering, machine learning, artificial intelligence, statistical analysis, numerical methods, cybersecurity, informatics, wireless networking, robotics and drones, data analytics, climate change modeling.

Physics: Particle detector R&D, scintillator composition, cosmic-rays related activities.

Environmental Science: Field and laboratory analysis of water and soil quality using EPA and stand methods of analysis. Sediments by filtration and turbidity, nutrients (total N, NH₃-N, NO₃-N, NO₂-N, total P), total coliform and E Coli, heavy metals (via ICP-MS and colorimetric methods), cation and anion analysis (via ion chromatography and ion-selective electrodes).

Biology: Microbiology, molecular biology, ecology, plant science

Health Disparities: Mental health, obesity

FACILITIES

Cybersecurity Laboratory- Cybersecurity, digital forensics, risks management, encryption/decryption, network and security, and penetration testing.

Robotics and Sensor Laboratory- Equipped with workstations, robots, 3-D printers, and other AI equipment. Focused on research on automation, AI, application of AI in environmental science, autonomous farming, humanoid robotics, robot sensing.

Data Analytics Laboratory- Data visualization, data processing, data representation, statistical analysis, algorithm development, machine learning, artificial intelligence, parallel and distributed computing, cloud computing, database, application of AI in other STEM fields

Physics Laboratory- Ultra high energy cosmic rays' detection, material characterization, fluorescence analysis

Laboratory for Water Quality- Muffle furnace, centrifuge, IDEXX Quati-tray for bacterial analysis, Hach DR6000 UV/Vis, YSI field probes (pH, conductivity, ODO), LaMotte 2020i turbidity meter, ThermoFisher Dionex ion chromatography, PerkinElmer Nexlon 1000 ICP-MS

Chemistry Laboratories- Lumina Fluorescent Spectrometer, Nicolet IS5 FT-IR, Perkin Elmer HPLC, Perkin Elmer Raman Spectrometer, Shimadzu HPLC-MS, Shimadzu GC-MS, Spinsolv Carbon 60 and 80 MHz spectrometer, Perkin Elmer Spotlight 200i IR microscope, Perkin Elmer Evolution 300 UV-VIS, Varian Cary 5000 UV/Vis-NIR

Biology Laboratories:- DNA analysis, protein analysis, fluorescent microscopy, growth chambers, laminar flow hoods, incubators, aquaria,

PAST PERFORMANCE

National Science Foundation: collaborated with other institutions, Clayton State University has won an NSF grant which supports graduate students and faculty summer research in skin cancer detection using AI and ML. Research progress has been presented in the STEM symposium.

National Science Foundation, which includes material characterization and fluorescence analysis.

NASA MUREP PSI, which includes promoting STEM interest in high school students by summer residential college experiences. Authentic STEM engagement in earth science, AI, machine learning and data modeling.

NSA, which includes summer camps to teach next generation cybersecurity concepts to increase awareness of cybersecurity in local communities.

NASA MUREP Innovative New Designs for Space (MINDS), multiple years, multiple teams. Cohorts of students supervised by faculty competed in NASA MINDs 2023 and 2024. In 2023, the senior team was selected to be finalist, and won 3rd place of the technical posters award.

Department of Education MSEIP, grant for STEM bootcamp, learning assistants in math, chemistry, and biology courses.

Department of Education PBI, grant for learning assistants in math, chemistry, and biology courses.