

Chicago State University STEM Research Capabilities

The STEM fields are represented in three departments at Chicago State University,

- Biological Sciences
- Chemistry, Physics and Engineering Studies
- Mathematics and Computer Science

Each department uniquely equipped to help our students fulfill their dreams and goals of becoming leaders in the profession and intellectual world while making novel contributions to the academy

Biological Sciences

Research Areas: Plant physiology, biotechnology, biochemistry, horticulture, aquatic and wetland biology, pathophysiology, neurobiology, chronobiology, molecular physiology, genomics, cell biology, conservation biology, ecology, population dynamics, pathology, transplantation, immunology, biogeography, transmission, molecular, and evolutionary mammalian genetics, plant molecular genetics, electron tomography, correlative light/electron microscopy, energetics and nutrient metabolism of lower vertebrates, molecular biology, paleoherpetology

Facilities and resources: core microscopy facility with both scanning and transmission electron microscopes, a fluorescence-activated cell sorter, comprehensive anatomy labs [including cadavers], a greenhouse, and a new aquaponics center.

Chemistry, Physics and Engineering Studies

Chemistry Research Areas: Biochemistry, nanotechnology, scanning microscopy, electrochemistry, photochemistry, photobiology, cyclic voltammetry, chemical sensors, computational chemistry, molecular dynamics, organic synthesis, high energy chemistry, radiation safety spectrophotometry, contaminants, pollutions sensors green chemistry

Chemistry Facilities and resources Atomic Force Microscope, liquid/gas chromatography, nuclear magnetic resonance facility, industrial microwave instrumentation, UV spectrophotometers, mass spectrometer, PH testing suite, Bio/Organic/Physical Chemical laboratories, cryogenic storage facility, flow cytometry facility, high performance computing cluster

Physics and Engineering Research Areas: Cosmology, microwave and radio astronomy, high energy nuclear physics, heavy ion collisions, comics rays, detector techniques for nuclear and particle physics, optics, electronic imaging systems, nanotechnology, turbomachinery, wind energy, fluid power systems, computation fluid dynamic, materials science, photovoltaics, nanomaterials, semiconductor devices thermal management, physics and engineering education

Physics and Engineering Facilities and resources: detector-testing laboratory, multicore high performance computation clusters, optical tables, electronics testing equipment,

Mathematics and Computer Science

Mathematics Research Areas: Number Theory, Cryptography, mathematical biology, differential equations, algebraic geometry, integration theory, global analysis and mathematical education

Computer Science Research Areas: Cybersecurity, Database managements and design, artificial Intelligence, machine learning and Image processing

Facilities and resources: server theory and design laboratory, multicore high performance computation clusters