

Cal State LA Capability Statement

Institution: **Cal State LA**

DUNS No: **066697590**

Cage Code: **OWEG3**

NACIS ID(s): **611310**

SIC:

Federal EIN No: **954016653**

Certificates, Registrations, Accreditations: **WASC; ABET; ABAI; CACREP; CORE; IRA; NASP; NCATE; California Commission on Teacher Credentialing; AACSB; CAA; ASHA; CCNE; OLAW; FWA; Title III/V; AANAPISI**

POC Information: **Dr. Jeffrey Underwood , Associate Vice President for Research**

Address: 551 State University Drive, Los Angeles, CA;

Tel: (323) 343-3793 email: Jeffrey.Underwood@calstatela.edu

OVERVIEW

Founded in 1947, Cal State LA is the premier public comprehensive university in the heart of Los Angeles including our newly opened Cal State LA Downtown, offering degree and certificate programs in a vibrant section of the city. Cal State LA's eight colleges are recognized for outstanding academic programs and small classes, where students are taught and mentored by professors who get to know them as exceptional individuals. We offer 60 undergraduate majors, 55 Master's degree programs and three doctoral programs. The student demographics of Cal State LA reflect the Los Angeles region, with 76.4% Hispanic/Latino, 5.5% Black or African-American, and 14.5% Asian-Pacific Islander students and 59.7% female students. We have been named by *Washington Monthly* as one of the top 10 Master's universities in the nation for our contributions to the public good. The National Science Foundation has listed our University as the top supplier of Latino science and engineering Ph.D. recipients among all undergraduate and master's degree universities in the continental United States. We are a powerful engine of social mobility.

RESEARCH CAPABILITIES

Biomedical Research: Cell fate and differentiation in early tissue development, contributions of mitochondrial biology and cellular metabolism to disease, craniofacial development, fungal pathogenesis, innate mucosal immunity, physical activity and antidepressant treatment interactions in the brain, novel antibiotic drug discovery, mechanisms of antibiotic resistance, cardiovascular metabolism, developmental neurobiology, RNA metabolism, p53, drug-protein interaction, protein modification, and microfluidic platforms for point-of-care diagnostics.

Chemistry: Microfluidics, point-of-care (POC) diagnostic devices, fuel cells, chip fabrication, electro- and photocatalysis, nuclear magnetic resonance, nanoparticles and hydrogels for drug-delivery, protein methylation, function, photovoltaics, chemometrics, structure-function relationships in proteins, photochemistry, and signal transduction pathway determination.

Mathematics/Computer Science: Probability theory, topology, computer networks, software engineering and operating systems, computer system architecture, data mining, large-scale machine learning, high performance computing, cloud computing, network security, and augmented reality.

Engineering: Additive manufacturing, computational materials science, thermal and fluid sciences, machine design, biomechanics, robotics and autonomous systems, bio-/nano-mechanics, multibody dynamics, image processing, propulsion systems, power systems, neural networks, computer architecture, fuel cells, hydrogen infrastructure and energy storage, sustainability, electric and hybrid vehicles, combustion, renewable energy, control systems, geotechnical engineering; earthquake engineering, and hydrology/water resources engineering.

Physics: Multiferroic materials and characterization, nuclear magnetic resonance, theoretical physics of materials, superconducting materials, and photovoltaics.

Forensic Science: Trauma and traumatic stress, community policing, hate crimes, miRNA markers for detection of wound cells in bloodstains, modeling of bloodstain pattern, time-of-death determination, mtDNA, trace evidence, sexual assault, pharmacology and toxicology of controlled substances.

Health Disparities: Drug abuse, dietary and strength training intervention for overweight minority youth, risk factors in overweight Latino youth, HIV, health communication, risk factors influencing sex and drug related behaviors of transgender women and gay men, and STI prevention in at-risk youth and young adults.

Environmental Science: Environmental geochemistry, igneous petrology, volcanology, hydrogeology, groundwater modeling, air pollution, hydrologic modeling, remote sensing, GIS, computer cartography, sedimentary petrology, climatology, meteorology, global environmental changes, environmental microbiology, strength properties of soils, air quality control and modeling climate change.

Supply Chain and Logistics: Support decision making, operations, supply chain management, risk management in supply chain, supply chain innovations, leadership development, labor conditions, relations and negotiations, entrepreneurship, operations/finance interface, cost and managerial accounting

FACILITIES

Major & Specialized Instrumentation - SEM, NMR, AFM, TEM, lithographic instrumentation including mask aligners, surface plasmon resonance, real-time PCR, FT-IR, fluorescence microscopy, X-ray diffractometer, GC-MS, TOF-MS, potentiostat/galvanostat, HPLC, UV-VIS, fluorometer, DNA microarray scanner, proteome analyzer, flow cytometer, nanodrop spectrometer, confocal and epifluorescent microscopes, peptide synthesizer, ellipsometer, and atomic absorption spectroscopy.

The California State University Program for Education and Research in Biotechnology (CSUPERB) - Develop a professional biotechnology workforce by mobilizing and supporting collaborative CSU student and faculty research, innovating educational practices, and partnering with the life science industry, provides seed grant funding, organizes an annual biotechnology symposium, and sponsors industry-responsive curriculum.

Water Resources and Policy Initiatives (WRPI) - Founded in 2008 and composed of more than 250 water experts from throughout its 23 CSU campuses, developing water management solutions through research, partnerships, education and training that provides students with hands-on learning.

California Forensic Science Institute (CFSI) – A presidentially-chartered institute delivers in-service training courses for current criminal justice system professionals.

Center for Energy and Sustainability (CEaS)- Three synergistic subprojects under the unified theme of 'Energy-Related Materials and Technologies' including microfluidic fuel cells, advanced materials for photovoltaics, and applications of high-temperature superconductors which provide students with research experiences.

CREST Center for Advancement toward Sustainable Urban Systems (CATSUS) – Funding just announced.

Advanced Materials and Manufacturing Laboratory (AM²L) – Houses research facilities for Additive Manufacturing and Integrated Computational Materials Engineering. Activities sponsored by NASA-PSI and NSF-PREM.

Cal State LA BioSpace – Leads in the University's mission to promote a thriving bioscience ecosystem in the heart of Los Angeles. Cal State LA BioSpace provides emerging entrepreneurs with facilities, resources, training and knowledge to launch startup ventures and spur regional economic development.

PAST PERFORMANCE (Over approximately the last 8 years)

Department of Defense: Includes study to evaluate non-contact geophysical methods to determine seabed geotechnical properties through controlled laboratory and field trials; Development of new sensor application technologies to detect agents found in chemical warfare agents and explosives using non-imaging techniques. **Economic Development Agency:** Developed three components for the proof-of-concept Center, LABioStart: a boot camp for bioscience entrepreneurs: (1) Bioscience Entrepreneur's Bootcamp; (2) Networking Sessions; (3) Regional Innovation Showcases; Created The BioSpace LA Incubator at Cal State LA that serves as an economic development hub for supporting bioscience start-up companies.

National Aeronautics and Space Administration: Addressing and supporting some of key challenges of the following missions –Aeronautics Research Mission Directorate (Uninhabited Aerial Vehicles (UAVs), and Combustion) and Human Exploration Operations Mission Directorate (James Webb Space Telescope); Research areas also included: Intelligent Flight Control, Autonomous Control and Design of Unmanned Air Vehicles, Modeling and Advanced Simulation and Virtual Aircraft Design, Space Telescope Technology and Precision Pointing, Failure and Reconfiguration in Complex Systems, Optimization of Propulsion and Energy Systems, Ubiquitous Computing and Embedded Architectures; and Wind-Tunnel Testing/Validation. Most recently funded research experience in scientific computing and data analysis in areas of hydrology and climate change, computational physics, and cloud computing and collaborative research projects among Cal State LA, JPL, and UCI (NASA Data Intensive Research and Education Center for STEM).

National Institutes of Health: Training underrepresented minorities in M.S. programs for enhanced acceptance to Ph.D. programs; Define how chemical factors affect the antifreeze activity of AFPs to explore the possible mechanisms of the enhancer molecules and thus rationally identify novel, efficient enhancers for AFPs; Curricular reform in the lower division so that all required lecture and laboratory courses include research activities.

National Science Foundation: Acquisition of a seismic testing shake table and a variety of sensors for structural testing; Develop highly effective cryoprotectant systems by combining antifreeze proteins with conventional cryoprotectants used in cryopreservation (e.g., inorganic salts, polyols, and carbohydrates); Microfluidic-based fuel cells and optimization; Advanced materials for photovoltaic cells; Novel superconducting materials and applications.