



University of Massachusetts Boston Capability Statement

Institution: **University of Massachusetts Boston**

DUNS No: **80 800 8122** Cage Code: **9B961** NAICS ID(s): **611310** SIC: **8221** Federal EIN No: **04-3167352**
Certificates, Registrations, Accreditations: **ABET, SACSCOC, CSWE; CACREP, ACBSP, NCATE; RFEPAC; ACEN; ACS**

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OVERVIEW

The University of Massachusetts Boston is a model of excellence for urban public research universities known for its inclusive culture, student-centered teaching and deep connections to the booming economy and rich civic life of Boston. UMass Boston is the 3rd most diverse University in the United States. With a total enrollment of over 16,000, including over 12,800 undergraduates, UMass Boston students come from diverse educational, economic, social, racial, cultural, and linguistic backgrounds. In Fall 2019, 45% of undergraduates were Pell-eligible, 71% of these students were first-generation college-going, and 58% spoke a language other than English at home.

RESEARCH CAPABILITIES

Located on the water, UMass Boston's stunning oceanfront campus gives its students direct access to Boston Harbor as well as the resources of Boston's vibrant innovation economy. Taken together, these create opportunities in the IT, life-sciences and bio-pharma, advanced manufacturing, clean energy, emerging quantum technologies, fin tech and blue tech sectors to name but a few. The campus scholarship and research capabilities are strongly motivated by community engagement so these areas align well with program development targeted at potential employment options for our students. The campus also houses an incubator for small start-ups that also creates apprenticeships, internships and entrepreneurial mentoring for interested students. Some of the campus strengths are:

Biomedical Research (Center for Personalized Cancer, LSAMP, IMSD, McNair, Bridges programs and industry sponsored initiatives); **Green Chemistry** (PhD program); **Computer Science** (ABET accredited BS, applied database research, bioinformatics, computer vision, cybersecurity, data mining, distributed software systems, higher performance computing, and visual attention); **Quantum Information Science and Technology** (Certificate program, testing lab); **Data Science** (Integrative Biosciences & Computational Sciences PhD, High Performance Computing); **Environmental Science** (Stone Living Lab for Coastal Resilience, Center for Environmental Sensing Networks, remote sensing, conservation biology, aquatic toxicology).

FACILITIES

Nine core facilities include: Genomics, Vivarium, Proteomics, Advanced Digital Design and Fabrication, Imaging, Flow Cytometry, Molecular Spectroscopy, Nanofabrication, and Environmental Analytical Core Facilities. The Maine Operations maintains an ADA compliant dock, 100-person MV Columbia Point and fully outfitted RV Neritic. The Nantucket Field Station, a 107-acre field site with lab and bunkhouse provides students and faculty a transformative research and educational experience.

PAST PERFORMANCE

UMass Boston surpassed \$64M in sponsored research activity in 2020 from many federal agencies including NSF, NASA, NOAA, NIH, EPA, and USDA. UMass Boston's NSF HERD Expenditures from 2010-2020 are as follows:

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
56,416	57,040	60,086	60,380	61,186	62,374	64,223	70,019	61,473	62,018	64,219

NOAA: Climate Risk, Vulnerability, and Resilience among Transient Populations**NASA:**

Using hyperspectral imagery to assess the effects of warming on New England kelp
Maintenance and Continuity of Suomi-NPP and JPSS VIIRS Albedo, BRDF, and NBAR Pro
Partners Aligned To Heighten broad participation in STEM (PATHS)
Continued Maintenance of the Terra/Aqua MODIS Albedo, NBAR, and BRDF Product

National Science Foundation:

Cool Science: Art as a Vehicle for Intergenerational Learning
Collaborative Research: What makes a generalist herbivore?
REU: Research Experience in Integrative & Evolutionary Biology
Transitions in Quantum Complexity
Practical Searchable Encryption for Geospatial Data and Application
Large deviations and driven processes for stochastic models of gene expression
Assessment Practices of STEM Teachers
Ways to mitigate decoherence in solitonic Schrodinger cats
RAISE-TAQS: Symmetry Protected Quantum Bits through Fluxon Pairing
Asset-Based Supplemental Chemistry
Collaborative Research: GeoGaze: Gaze-Driven Adaptive Multimedia to Augment
SCC-PG: Connecting Coastal Communities (CCC)
Career: Microbiome regulation by amphibian skin peptides
Collaborative Proposal: RoL: The Scale of Resistance: Landscape to Microbiome-level
Speed limits on the dynamics of pattern formation
Analyzing a Multigenerational Mentorship Environment Designed to Advance STEM
Collaborative Proposal: What Black Doctoral Students in STEM Want and What Their
Acquisition of a high resolution inductively coupled plasma mass spectrometer and
Urban Massachusetts Louis Stokes Alliance for Minority Participation Program
Understanding Interfaces of Energy Storage Materials with a real-time Dynamic
Investigating Conserved Function of Sex Determining and Differentiating Genes

US Department of Defense:

Functional Characterization of Forkhead-Domain Missense Mutations of FOXA1
Inhibiting Lysine-Specific Demethylase 1 Activity as a Potential Therapeutic
Targeting FOXA1 methylation in castration-resistant prostate cancer

National Institutes of Health

Screening antibodies for paper-based zika and dengue assays using microfluidic
Base Excision Repair Deficiency as a Risk Modifier in BRCA2 Associated Cancer
Vascular mechanisms and tDCS treatment of gait and posture in aging and age
A single-sided magnetic particle imaging scanner for in-vivo breast cancer imaging
Mechanisms of signal integration in developmental control of organ size and tissue
Study the Mechanism of Retinoblastoma Protein Mediated Androgen Receptor...
Targeting Dynamin-related protein 1- mediated mitochondrial fission
Coordinating cellular events during spore development
Undergraduate Summer Research Opportunities in Maternal, Child and Family Health
Cognitive effort and capacity in visual working memory development

UMass Boston — Dana-Farber/Harvard Cancer Center Partnership