UMass Boston’s Responses to the 2014 Innovation and Economic Prosperity University Designation and Awards Program (IEP)
University of Massachusetts Boston Institutional Overview

Vision/Definitions

UMass Boston defines community engagement as work with external stakeholders to exchange knowledge and resources to address community needs while advancing university teaching, research, service, and economic development. Specifically, community-engaged economic and community development include research on the economy at the macro and micro levels, workforce development, business development and assistance, and research that can have commercial application for the public good (adapted and shortened definition).

APLU’s economic prosperity definition speaks to the assets-based approach we promote in our engagement and collaboration. We build from existing community resources, value diversity, and view community members as co-educators and co-producers of knowledge. Chancellor J. Keith Motley recently said that “the prosperity of our commonwealth’s families and communities lies within the power of our human and social capital. As the university continues to expand its community partnerships, we build upon the wealth of our networks.”

Focus Areas

As Boston’s public research university, our founding urban mission shaped us as a teaching institution that provides access to educational excellence and serves the needs of the greater Boston region, hence our emphasis on talent and place. In the past ten years, UMass Boston has built upon this strong foundation to enhance the scope of our work and move towards becoming a leader of innovative research particularly focused on creating opportunities for underserved populations in local communities and often in the context of an increasingly global society. This shift has attracted new funding to the university as reflected in the increase in research dollars from 19.8M in 2001 to $57.3M in 2013.

University Accomplishments

Our growing research enterprise has had tremendous impact on UMass Boston’s ability to leverage new opportunities and become a leader within the innovation economy of Boston. In 2005, the receipt of a National Cancer Institute U56 grant and a subsequent U54 grant, in partnership with Dana-Farber/Harvard Cancer Center (DF/HCC), have built capacity of biotech and cancer health disparity research at the university. The Venture Development Center (VDC) complements this partnership by providing affordable laboratories/offices and expert mentoring to start-up life sciences and health technology companies. The Center for Personalized Cancer Therapy was also established in the VDC through the DF/HCC partnership and received a $10M grant from the MA Life Science Center.
These additions accompany our variety of innovation development programs that include small business assistance, market research, and continuous improvement consulting. Supporting these efforts, our faculty have a unique commitment to translational research: 42% define their work as applied research and 33% describe their scholarship as community-engaged.

Building on our urban mission and dedication to place development, we continue to leverage university resources to foster inclusive, sustainable communities. UMass Boston is widely known for addressing the cultural, health, and educational needs specific to Latino, Black, Asian American, and Native populations through its four ethnic institutes. Creating communities where people want to live, work, and play is also dependent on the natural environment and effective governance. Speaking to this, the university partnered with the Massachusetts Water Resources Authority to launch the extensive clean-up of the Boston Harbor in 1982. Our faculty continue to lead cross-sector efforts to restore the health of our regional ecosystem and coastal resiliency. In addition, the Collins Center has provided technical assistance to improve efficiency and
accountability in over 150 municipalities, 24 school districts, 13 regional agencies, and 8 state secretariats in Massachusetts.

The university’s talent development initiatives date to our founding when the 1964 Economic Opportunity Act authorized UMass Boston to become one of the first in the country to implement Upward Bound. Today, we offer seven pre-collegiate programs with 95% of high school participants enrolling in college. Preparing our students to thrive in their vocations through hands-on learning experiences is also a top priority for the institution. In 2013, 10,702 of our students put theory into practice through their participation in 780 community-engaged classes.

Connections

The Office of Community Partnerships (OCP) was created in 2011 to provide the critical infrastructure necessary to align activities into multidimensional initiatives. Through this coordinated approach, OCP serves as a facilitator among internal and external stakeholders to ensure interdisciplinary and cross-sector collaboration. OCP’s establishment and its coordination of the engagement enterprise have been key factors in our ability to build connections across the domains of talent, place, and innovation.

Our faculty and student body are the most diverse among higher education institutions in New England. This enables UMass Boston to bring unique assets that other universities often lack and contributes to our ability to connect across domains. In fact, our diversity draws partners to the university to help diversify their industry’s workforce or provide an access point to collaborate with communities.

UMass Boston initiatives advance talent development by introducing our diverse students to the innovation economy. Experiential learning in industry and business builds student profiles, thus increasing their opportunities and earning power. This collectively impacts the economic self-sufficiency of greater Boston communities, from which our students come from and return to. For example, the VDC has placed 160 trained interns in the past three years in high tech start-ups with over 70% receiving permanent job offers.

Finally, the intersection of talent and place are prevalent throughout our widespread community-serving and engaged research. This translates into significant benefits within communities, whether through evaluation research of place-based initiatives such as the Fairmount Corridor Initiative, a transportation-orientated urban development project that invests in housing, jobs, economic and cultural opportunities, or through research addressing a community-identified need that leads to interventions and changes to service delivery. To illustrate UMass Boston’s multipronged approach to partnerships, the visual below demonstrates our transdisciplinary ties to Thrive in 5, a place-based initiative promoting universal school readiness.
Given UMass Boston’s strengths in talent and place, our case studies reflect our broad conceptualization of innovation as novel approaches and solutions to problem solving, building community capital, and creating equitable opportunities for all. These strengths are a result of strategically designed university infrastructure that advances scalable projects and builds networks to stimulate economy and workforce.
Broadening Advanced Technological Education Connections (BATEC)

Created at the University of Massachusetts Boston in 2003, BATEC brings together cross-sector stakeholders from education, industry, and the community to collectively build a seamless and robust education-to-workforce pathway for students from underrepresented backgrounds in IT fields. Funded by National Science Foundation (NSF) since 2003, the BATEC network includes seven Massachusetts community colleges, 30 feeder public school districts, and more than 75 industry, governmental, and community partners. BATEC is transforming IT education through innovative curriculum aligned across educational levels, experiential learning opportunities, and professional development. This has transformed the region’s IT educational opportunities into a coordinated system that propels students into STEM fields to meet the IT workforce needs. Based on BATEC’s regional success, its model was scaled nationally in 2011.

Promoting a Diverse Workforce

At the heart of its work, BATEC focuses on attracting students, particularly women and those from ethnically and culturally diverse backgrounds, to pursue STEM degrees and careers. This includes a variety of evidence-based approaches to student engagement that bring together guidance counselors, educators, and community organizations at the K-12 level, and the administration in postsecondary settings. In 2013-14, 8,146 Massachusetts students from secondary, associate, and baccalaureate schools participated in at least one BATEC-supported opportunity, such as dual enrollment courses, bridge programs, and internships.

Massachusetts high school students gain IT skills and earn college credit in BATEC’s Summer Bridge Program.
An exemplary best practice, the Tech Apprentice Program is a seven-week paid internship that places students with local companies spanning industries like financial services, healthcare, nonprofit, higher education, media, and information technology. As a 2006 Tech Apprentice, Kostian Iftica supported a major project to digitize medical records at the New England Baptist Hospital. Iftica then went on to study management information systems at UMass Boston. After creating a business plan for a technology consulting company as part of his capstone and with support from advisors at the university’s VDC and Massachusetts Small Business Development Center, Iftica was able to “visualize the company’s structure, income, and expenses.” His company Brilliant Geeks serves over 200 clients today. Annually, over 130 Boston Public School students participate in Tech Apprentice with 93% of participants attending college and 75% choosing Computer and Information Technology programs. In 2013, the success of Tech Apprentice prompted BATEC to replicate the model at three community colleges in Massachusetts, resulting in an additional 65 student internships this year.

**Industry Alignment**

BATEC pioneered a model process for the integration of 21st century skills throughout local IT education programs. Rigorous content is collaboratively created in response to current and emerging industry needs.

In 2007, BATEC published a ground-breaking IT Workforce Skills Study, which included input from workers, hiring managers, and strategic planners across the country. The report concluded that employability skills (communication, collaboration, resourcefulness, and teamwork) and contextual skills (ability to apply skills in a real world environment) “are every bit as important as any technical skill element an employee may possess.” In 2013-14, BATEC supported nine projects in Massachusetts to create and align curriculum across academic institutions and in collaboration with industry stakeholders.
One of these collaborators, Edwin Guarin of Microsoft, has been working with BATEC to provide expertise from the industry perspective. Excited by the pipeline created through BATEC, he has directly connected with students “through recruitment and awareness events as well as internships for those excited about learning new technologies and interested in career opportunities.”

BATEC supported Bunker Hill Community College (BHCC) to develop and implement a flexible, replicable model that integrates employability skills across a “stackable” curriculum with multiple entry points and “fast-tracking” time to completion. Obtaining the first stackable certificate enables students the ability to enter the workplace as they continue to advance to an associate’s degree or higher. One student, Orlando Medeiros, reflected that upon enrollment at BHCC, Professor Velluto “helped [him] come up with a road map for advancing [his] skills.” Learning about the pipeline, Medeiros transferred into UMass Boston’s BSIT program while also launching his own digital forensics start-up, Dynamic Recon.
Several years into implementing the stackable credential system, BHCC reports a 60% increase in degree completion rates by the departments working with BATEC. These programmatic successes have also resulted in increased funding connected to partner institutions – BHCC credits their collaboration with BATEC for helping secure over $3.5 million in additional sponsored projects. This success has been recognized by the Massachusetts Legislature and prompted elected officials to include the model in a recently enacted Economic Development Bill, which will provide $1M for expansion of this system through the Department of Higher Education in collaboration with BHCC and BATEC.

**Professional Development**

To support educators shifting toward applied, industry-informed IT education, BATEC offers an array of unique learning opportunities. The emerging picture of the “BATEC Educator” is one who has particular skills in designing and teaching courses that impart a high level of both technical and employability skills to students. BATEC’s annual one-week Summer Institute engages approximately 100 educators in workshops on emerging fields of technology, content instruction, and pedagogy. BATEC’s paid externship connects high school and collegiate faculty with local companies in order to gain additional content and case studies for classroom use.
National Expansion

In 2011, the NSF granted BATEC nearly $5 million to take their work to a national scale, supporting similar projects in Chicago, Las Vegas, and San Francisco. Last year, fifty-six institutions offered BATEC-influenced courses that engaged 20,032 students, representing an overall increase of 239% since 2007. BATEC’s work with Chicago Public Schools (CPS) and the City Colleges of Chicago (CCC) reflects this growing impact. To date, CCC has redesigned 22 courses and 6 programs in transfer and career-oriented degrees, which will impact an anticipated 700 students. Additionally, BATEC is supporting CPS’s rollout of the “computer science for all” initiative with Code.org. This will impact over 15,000 students within the first year and over 330,000 annually upon the completion of the three-year rollout. BATEC also assisted CPS with incorporating an IT Problem-Solving course into its Early College high school curriculum, a dual enrollment opportunity that 1,500 students have now completed.
Each September, over 150 Boston Public School (BPS) graduates step foot on the UMass Boston campus as new students, filled with the many promises that a college education brings. They are motivated by their families’ aspirations, encouragement from high school teachers, and their own hopes and dreams. Yet the majority of these students face significant barriers to completing college. They tend to come from underrepresented backgrounds, such as minority, immigrant, first-generation, and low-income. Despite the best intentions, their families often lack the knowledge and experience to support them with planning for college and navigating through it.

When a 2008 study confirmed that only 35.5% of BPS graduates who enrolled in all colleges earned an associate’s or bachelor’s degree within seven years, the former Boston mayor, the Boston Foundation’s president, and UMass Boston’s chancellor came together to launch the Success Boston College Completion Initiative (SBI), which aims to double the college graduation rate of BPS graduates. As his first action as co-chair, Chancellor Motley recruited thirty-seven Massachusetts colleges and universities to join the unprecedented partnership with BPS, city government, local foundations, and nonprofits.

As a lead partner, UMass Boston developed and implemented a data-driven cohort model for all partner colleges and universities to utilize. Our campus SBI program helps students transition into the university environment, build campus connections, and be an active partner in their education. University and nonprofit coaches provide intensive support, participate in monthly case-management meetings, and co-plan and implement activities aimed at increasing academic success and building community and engagement. Through wraparound services, students become deeply connected to the university and its many opportunities, resulting in higher rates of student success.
To better illustrate the vital role that the SBI plays in BPS graduates’ college experiences, meet Yen, Manny, and Ravie.

**Yen**

Yen’s family immigrated to Boston from Vietnam when she was five years old. Growing up, she was shy, self-conscious, and struggled academically. After enrolling in UMass Boston’s Transitions Program, invitations to participate in Success Boston created a buzz in Yen’s inbox and despite her nerves, she decided to check it out. When you meet Yen today, you find an ambitious, confident young woman and a star student.

Yen shared that through SBI she always felt informed about scholarships, job and co-curricular opportunities, and financial aid deadlines. Success Boston connected her to various university opportunities. Yen earned a spot in a two-year cancer research program called CURE (part of UMass Boston’s partnership with the Dana-
Farber/Harvard Cancer Center), participated in a “life-changing” service-learning trip to Puerto Rico, is a member of student government, and is utilizing her fluency in Vietnamese to lead health disparities research in her own community. “UMass Boston has given [me] a lot of different skill sets…No matter what it is…I can go out in the world and be good at what I do.”

Manny

Manny attributes Success Boston as the key factor in preventing him from dropping out – not once, but twice. As a first-generation Cape Verdean student, he struggled to balance his full course load with full-time employment. Success Boston connected him to an on-campus job, a seemingly small yet significant factor in his success. By spending more time on campus, he managed to forge new friendships, devote more time to studying, and gain career-oriented experience compared to his job in the fast food industry.

When a family tragedy struck, Manny felt so distressed that he skipped class and wandered the campus harbor walk. “As I was thinking about dropping out of school, one of my coaches called me. I just needed to be reassured by someone else who cared about me and I got that,” Manny recalled.

This unwavering support deeply motivated him to give back. He founded Ambitious Men Engaged in Necessary Dialogue (AMEND), which proved to be an effective strategy for bringing young men together in a safe place to discuss issues of identity, relationships, success, violence, and a host of other topics. Manny extended the reach of AMEND by leading the dialogues for one of UMass Boston’s pre-collegiate programs.

Ravie

When Ravie sought a safe space to work through the “internal struggles” he faced, AMEND was there for him. As a young child, Ravie moved to Boston from Guyana and faced an unstable home life marred by domestic violence. Through AMEND, he connected with peers and realized he wasn’t alone in his experiences.

Once connected to SBI, other components of Ravie’s experience started to click. “They provided opportunities that I couldn’t find (on my own),” Ravie explained. This past summer, his coach referred him to Career Services, which supported him in applying to the new CVP Career Academy. Through this UMass Boston partnership with CV Properties, Ravie landed a 10-week paid internship with Haley & Aldrich, an environmental consulting firm. There he applied theories and concepts from his environmental science major and gained hands-on skills like data organization and quality assurance checking.

Impacts
The initiative’s impact extends beyond Yen, Manny, and Ravie’s unique accounts – through its referral and relationship-building functions, the SBI demonstrates consistent progress as measured by persistence and performance. Since 2008, the percentage of students on track at the beginning of year two, defined by minimum 2.5 GPA/24 credits/six-year graduation, has increased significantly with each cohort. For instance, 65% of the 2012 cohort was on track compared to 2008’s 31%. Institutional Research also found that BPS graduates who entered in the fall 2012 cohort have remained enrolled at a higher rate than non-BPS students — 85% compared to 77%.

At a systems level, intensive planning continues and engages hundreds of stakeholders across the network to address key barriers, including contextual issues that affect the academic success of BPS graduates. UMass Boston’s leadership of this transformational initiative is grounded in the words of its chancellor, “There is no better way to invest in the future of our city than to invest in our students.”

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<tr>
<th>Progress, Persistence and Performance Measures of SBI Students</th>
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<tbody>
<tr>
<td>Number of students</td>
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<td>Complete initial FAFSA</td>
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<td>% of students who enroll semester 1</td>
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<td>% of students who enroll semester 3</td>
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<td>Maintain a cumulative GPA of 2.0 +</td>
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<td>On track for 6-year graduation—24 credits per year and 2.5+ GPA at the end of year 1**</td>
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The U54 Partnership

Funded by the National Cancer Institute in September 2010, the **U54 Minority Institution/Cancer Center Partnership Grant** brings together UMass Boston and the Dana-Farber/Harvard Cancer Center (DF/HCC) to collaborate on research that addressed issues of cancer health disparities in disenfranchised populations. Capitalizing on the strengths of both institutions, the partnership serves to improve research, training, and outreach opportunities for underrepresented minority (URM) students, fellows, and scientists and to develop information and resources toward closing the cancer health disparities gap. To date, the award has supported 13 collaborative and innovative research projects and three cores (survey, training, and outreach); leveraged $22.5M in additional external funding; and trained 22 early stage investigators and 93 postdocs and student trainees.

Cancer Training and Career Development

U54’s comprehensive approach to training and career development has institutionally transformed UMass Boston and DF/HCC. There have been more research grants submitted and received by early stage investigators, students exposed to research, and training opportunities for seasoned faculty than ever before. In addition, U54 has facilitated career promotions of early stage investigators at both institutions.

Efforts in UMass Boston’s College of Nursing are particularly noteworthy. As part of U56 (NIH-funded precursor to U54), the team launched an accelerated nursing **PhD program**. The program’s success led to the more recent U54 Nursing Postdoc Program, a national model for recruiting, retaining, and promoting the careers of nursing scientists. Thus, U56 and U54 combined have significantly increased the number of nursing undergraduates, graduate students, and postdocs (particularly URMs) pursuing cancer and cancer disparities research at UMass Boston and DF/HCC. Additionally, since DF/HCC does not have a nursing program, UMass Boston students progress through the pipeline to fill that void in the Cancer Center's training portfolio.
Through the Training Core and the Continuing Umbrella for Research Experiences (CURE) program, students are exposed to renowned basic and population science research mentors, have access to state-of-the-art facilities, and gain practical research experience in a driven and demanding, yet supportive environment. For example, Olivier Dantiste, an African American UMass Boston graduate student, received basic science training at the Dana-Farber Cancer Institute (DFCI) Lurie Imaging Center; and Cheyenne Foxtree-McGrath, a Native American UMass Boston undergraduate student, received training in psychosocial population research in cancer disparities at Massachusetts General Hospital.

**Capacity Building for Research**

The U54 award has been critical to promoting basic biomedical and cancer research at UMass Boston. Most recent evidence is the establishment of the Center for Personalized Cancer Therapy (CPCT), a $10M effort funded by the [Massachusetts Life Sciences Center](https://www.masslifesciences.com) (MLSC). The CPCT, a joint venture between UMass Boston and DF/HCC, will synergize efforts to foster and facilitate biomedical and cancer-focused research, sustain training efforts at all levels, and leverage investments to broaden the scope of cancer research over diverse disciplines such as biology, chemistry, public policy, sociology, nursing, mathematics, economics, and physics.
Since U54’s initiation, research funding received by UMass Boston faculty increased by approximately 16% ($49.6M in 2010 to $57.3M in 2013). To manage this growth, institution-wide trainings in grant management for business managers and department administrators added infrastructure to support a burgeoning research culture. In addition to the increasing financial capital, U54 provides access to state-of-the-art research facilities, cores, and networks for UMass Boston affiliated faculty. The Survey and Statistical Methods Core helps both U54 and non-U54 faculty members with research development, compilation of grant proposals, and data analysis for publications. The Training Core helps U54 investigators select and train undergraduates and pre- and post-doctoral fellows in biomedical and cancer research. The Outreach Core helps UMass Boston-DF/HCC research teams engage underserved populations.

The construction of the Integrated Science Building (ISC), opening in fall 2014, stems from the UMass Boston-DF/HCC partnership’s expanded research and funding. Our Labor Resource Center leads PGTI, a regional policy collaborative to create access to living wage jobs for women and people of color in the construction trades. PGTI has been instrumental in making the ISC the most diverse public construction project in Massachusetts history.

In the Community

Through UMass Boston’s leadership, the partnership has increased opportunities for DF/HCC and UMass Boston faculty to gain knowledge and expertise in conducting culturally-sensitive cancer disparities research with low socio-economic status populations. Resulting research connected to the Outreach Core has already led to meaningful impacts in the affected communities. As part of the U54 Outreach Core, CRUZA, the Alliance for Latino Health through Faith and Action, built the capacity of thirty-four Latino churches in Massachusetts to provide culturally-relevant cancer-related health education and resources to parishioners. Eighteen UMass
Boston students, all bilingual in Spanish, played integral roles. Aida, a first-generation UMass Boston student from El Salvador, reflected on her experience conducting population research through CRUZA, “It’s not easy because you have to adapt...community members want to help change their community and they need partnerships to (reflect their) voices.” Now an alumna, Aida is working as a nurse at a local community health center utilizing the skills she learned through the U54 training core.

Building off the network it created, CRUZA is leading an innovative biobanking awareness initiative to increase knowledge and change attitudes about personalized medicine. Partnerships with six Latino churches, and three housing developments and community centers have engaged 190 individuals from communities of color and medically-underserved populations. Additionally, the Gastón Institute is working with the CRUZA network to enroll Spanish- and Portuguese- speakers in the Affordable Care Act in communities across Massachusetts. This project was awarded by the U.S. DHHS Office of Minority Health.

The UMass Boston and DF/HCC partnership has also developed a resiliency program for medical interpreters who play an integral role in conveying critical information to cancer patients during moments of heightened distress. The research team found that the intervention positively impacted job satisfaction, coping skills, and reduced the number of sick days taken. Yilu Ma, Director of Interpreter Services for Brigham and Women’s reported that "the project is invaluable because medical interpreters now have a tool that they can use to relieve the stresses that are inflicted upon them when interpreting for trauma, end-of-life and terminally-ill
patients and their families." The statistical significance of this pilot prompted a planning team to strategize the implementation of the program in sites across Massachusetts.

In summary, U54’s benefit to both UMass Boston and DF/HCC is clear and compelling. Most importantly, the capacity building, cancer training, and career development synergistically advances community and economic development.