



UNIVERSITY-BUSINESS JOB CREATION PARTNERSHIPS

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UNIVERSITY OF HOUSTON'S (HU) STRATEGIC BUSINESS PARTNERSHIP

[According](#) to the Business-Higher Education Forum, HU's Undergraduate Petroleum Engineering Program is an example of a business-university partnership in which corporate managers and academic officials collaborate on designing and implementing curricula that address the petroleum industry's workforce needs.

UH responded to the 2000s energy boom by creating a program that combined "the fundamentals of petroleum engineering with the study of geosciences—an increasingly important tool in energy engineering—as well as training in economics, energy law, and business."

In developing the program, UH and its petroleum industry partners recognized the cultural differences between the academic and business worlds and began their collaboration by making small, incremental changes aimed at achieving larger goals.

ISSUE

Identify university-business partnerships in Connecticut that connect graduating students with jobs.

SUMMARY

An online survey found several examples of Connecticut colleges and universities that collaborate with businesses to prepare students for jobs in specific business sectors, including advanced manufacturing and electric power generation. These partnerships are similar to those the Business-Higher Education Forum (BHEF) described in its 2013 national study of strategic business-university partnerships ([The National Higher Education and Workforce Initiative: Forging Partnerships for Undergraduate Development](#)).

The study identifies several approaches that enable "business and higher education to move from transactional approaches to interaction—that is, limited to low-touch, piecemeal activities such as on-campus recruiting or support of research related to business products and services—to strategic and long-term partnerships to align human capital with workforce needs." We selected partnerships that appear to serve this purpose and grouped them according to the approaches the study identified. The

approaches are (1) involving business people in designing and teaching courses

with business applications (“introductory course design”), (2) combining classroom instruction and workplace experience (“earlier research internships”) and (3) helping high school students interested in specific career paths make the transition from high school to college and move on to their chosen careers (“bridge programs”).

Several Connecticut colleges and universities have taken the introductory course design approach in which faculty members and business leaders collaborate on developing curricula that prepare students for work in specific business sectors. These partnerships include UConn’s Pratt & Whitney Additive Manufacturing Innovation Center, community colleges’ Manufacturing Technology Programs, and Capital Community College’s programs that prepare students for information technology, hospitality, and insurance and financial sector jobs.

Dominion Connecticut’s and Connecticut Light and Power’s collaboration with several community colleges are examples of the earlier research internship approach. These companies provide scholarships and internships for students enrolling in community college programs that prepare them for entry-level jobs in the energy sector.

Lastly, the state’s Pathway to Technology (P-Tech) programs are bridge programs in which public school districts, businesses, and community colleges collaborate on preparing groups of students for jobs in specific business sectors.

Attachment 1 describes all of the approaches the study identified.

CONNECTICUT EXAMPLES OF STRATEGIC BUSINESS-UNIVERSITY PARTNERSHIPS

Our online survey found several examples of businesses that have formed ongoing, long-term partnerships with Connecticut colleges and universities to prepare students for jobs in specific fields. These examples are similar to those described in BHEF’s 2013 report on such partnerships across the nation. That report groups the partnerships into several categories based on their approach. We use those categories to discuss the Connecticut examples from our survey: introductory course design, earlier research partnerships, and bridge programs.

Introductory Course Design

According to BHEF, the introductory course design approach represents a shift away from “traditional lectures and the lecture-homework-exam format to a student-

centered format, which engages students through active learning with business partners providing business-relevant, real world projects, guest lectures, or course co-development.” These partnerships aim to match “more closely the classroom experience to the professional setting and motivating students to actively apply their coursework.”

Connecticut partnerships that include elements of the introductory course design approach are UConn’s Pratt and Whitney Additive Manufacturing Innovation Center, the Manufacturing Technology Programs at five community colleges, and Capital Community College’s business sector-based programs.

UConn’s Pratt and Whitney Additive Manufacturing Innovation Center.

Launched in 2011, this \$4.5 million center combines research and educational opportunities in advanced manufacturing technology, including 3-D printing and rapid advanced prototyping ([UConn Today](#), April 5, 2013). The center specifically allows Pratt and Whitney engineers and UConn faculty and students to collaborate on using this and other technologies to fabricate complex parts that make up aerospace and bioscience products. The center complements UConn’s development of new degrees and curricula focused on additive manufacturing (i.e., creating components layer by layer out of deposited material).

Manufacturing Technology Programs. [Asnuntuck](#), [Housatonic](#), [Naugatuck Valley](#), and [Quinebaug Valley](#) community colleges offer programs that prepare students for advanced manufacturing jobs by combining classroom instruction and hands-on training in reading blueprints, operating machining technology, and using computers to operate machines (i.e., computer numerical control machines, also referred to as CNCs). The programs include internships at manufacturing companies. Asnuntuck Community College states that 90% of the program’s graduates find jobs within three months after graduating.

Business Sector-Based Programs at Capital Community College. Capital Community College runs three programs that prepare students for jobs in information technology; customer service and hospitality; and insurance, financial resources, and real estate. It runs the information technology program out of its [Information Technology Education Center](#), which it established in partnership with Aetna, Inc., Cisco Systems, and the state’s Office of Workforce Competitiveness. Courses include programming, web design, networking, security, and project management.

Capital's [Customer Service and Hospitality Training Center](#) developed its curriculum in collaboration with corporate customer service and hospitality experts. Its "field-tested programs combine classroom training with hands-on experience in simulated call center and hospitality environments."

Lastly, the college's [Insurance and Financial Services Center of Educational Excellence](#) offers courses in insurance, financial services, and real estate that are based on each sector's needs. The center targets "dislocated, unemployed, underemployed, and incumbent workers." Its coursework focuses on banking, asset management, investments and securities, annuities, real estate, and property, health, and life insurance.

Earlier Research Internships

Colleges and universities applying the earlier research internship approach offer business internships that begin in the summer after the freshman year and that are "explicitly tied to a student's coursework," thus reinforcing "the content relevance and real-world application of the subject matter." Examples of these approaches in Connecticut include Dominion Nuclear Connecticut's collaboration with Three Rivers Community College and Connecticut Light and Power's collaboration with five community colleges.

Dominion Nuclear Connecticut Millstone Power Station and Three Rivers Community College. Three Rivers Community College's Nuclear Engineering Technology Program combines classroom learning and relevant work experience. In addition to providing scholarships to students entering this program, Dominion Nuclear Connecticut offers 12-week summer jobs in areas ranging from instrumentation and control to emergency planning. Consequently, scholarship students seeking jobs upon graduation are qualified for many different entry-level jobs in the nuclear power industry, the college [reports](#).

Connecticut Light & Power's Electric Power Technology Program at Five Community Colleges. This electric power pathway program offers an associate's degree in technology studies and training for cable line splicers or electric power utility line mechanics. The program includes hands-on training at CL&P's training center and field internships at the company's work centers. Participating students must work 40 hours per week during an entire summer or winter break and are evaluated by CL&P evaluators. The program is offered at Northwestern, Manchester, Middlesex, Naugatuck Valley, and Three Rivers community colleges.

Bridge Programs: Community Colleges' P-Tech Programs

Bridge programs help groups of high school students interested in pursuing specific careers successfully move from high school to college to career. Some help community college students transfer to four-year colleges. In both cases, bridge programs encourage students to stay in school and help them improve their grades.

Connecticut's P-Tech programs, like those in other states, are based on a model IBM developed to prepare high school students for careers in growing industries, especially industries where increasing skill shortage rates threaten their growth. The model is built on a partnership between local school districts, community colleges, and business sponsors.

[Norwalk Early College Academy](#) is a partnership, started in 2014, between the city's public schools, Norwalk Community College, and IBM that helps students in grades nine to 14 earn a high school diploma and no-cost associate's degree in applied science in just six years. The partnership matches students with an IBM mentor, who shows them how their classwork will help them solve workplace problems. IBM gives priority to graduating students who apply for jobs with the company.

P-Tech programs have recently started in Danbury (Danbury Public Schools, Naugatuck Valley Community College, and Pitney Bowes); New London (New London Public Schools, Three Rivers Community College, Electric Boat, and the Eastern Advanced Manufacturing Alliance); and Windham (Windham Public Schools, Quinebaug Valley Community College, Electric Boat, and Eastern Advanced Manufacturing Alliance).

Attachment 1: Summary of Approaches Taken by University-Business Partnerships

Approach	Description	Connecticut Examples
Introductory Course Redesign	<ul style="list-style-type: none"> • Moves away from traditional lectures and the lecture-homework-exam format to: <ul style="list-style-type: none"> ○ a student-centered format, ○ engaging students through active learning with business partners providing business-relevant, real-world projects ○ guest lectures, or ○ course co-development, • Matches the classroom experience more closely to the professional setting • Motivates students to actively apply their coursework 	<ul style="list-style-type: none"> • UConn Pratt & Whitney Additive Manufacturing Innovation Center • CT Advanced Manufacturing Certificate Program: <ul style="list-style-type: none"> ○ Asnuntuck Community College ○ Housatonic Community College ○ Quinebaug Valley Community College • Capitol Community College: <ul style="list-style-type: none"> ○ Insurance and Financial Services Center of Educational Excellence ○ Customer Service and Hospitality Training Center ○ Information Technology Education Center
Earlier Research Internships	<ul style="list-style-type: none"> • Exposes students to research, training, and a professional environment outside of their university through internships that begin in the summer after freshman year • explicitly tied to a student's coursework • mutually reinforce the content relevancy and real-world application of the subject matter 	<ul style="list-style-type: none"> • Three Rivers Community College: Dominion Nuclear Power Station summer employment program • Connecticut Light and Power's Electric Power Technology Program at: <ul style="list-style-type: none"> ○ Northwestern Community College ○ Manchester Community College ○ Middlesex Community College ○ Naugatuck Valley Community College ○ Three Rivers Community College
Freshman Research Experience	<ul style="list-style-type: none"> • Prepares students to conduct research through a sequence of courses beginning their first semester of the freshmen year in which business partners co-develop, co-teach, or validate the courses • Matches students' training to business needs 	No examples from survey
Cognitive Tutors	<ul style="list-style-type: none"> • Provides educational software containing an artificial intelligence component that tracks students' progress and challenges to learning and tailors feedback to their individual needs • Uses tutors to increase learning and enhance student engagement and satisfaction 	No examples from survey
Multiple Mentors	Provides students with a team of year-round academic, corporate, and peer mentors to maximize their potential support network	No examples from survey

Student Learning Communities	Involves a defined group of students taking together two or more classes that are often organized around a common theme and may require involvement in out-of-class activities	No examples from survey
Bridge Programs	Provides cohort-style series of courses, activities, and learning experiences intended to help students make a smooth transition from high school to college	Pathway to Technology (P-Tech) Programs at: <ul style="list-style-type: none"> • Naugatuck Valley Community College • Norwalk Community College • Three Rivers Community College • Quinebaug Valley Community College

Source: BHEF, *The National Higher Education and Workforce Initiative: Forging Strategic Partnerships for Undergraduate Innovation and Workforce Development*, 2013

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