Designing and Implementing an Industry-aligned Robotics Technician Certificate Program

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What are we trying to do? Increase access to short, intensive robotics technician education

How are we doing it? Build and test a one year robotics technician certificate program

PROGRAM CURRICULUM: Our preliminary curriculum draws a number of courses directly from Mechatronics (Electronics, Digital Circuits, Embedded Microcontrollers), Manufacturing (Mechanical CAD, Machine Operation, Materials Science), and Computer Science and Information Systems (Microcomputer Applications). We will also develop new hands-on robotics courses in each semester that will draw from the VEX program as well as the robotics classes in Mechatronics (Industrial Robotics) and Manufacturing (Process Automation and Robotics).

The curriculum at present is preliminary because it is based on our limited knowledge of the critical skills employers want and the best ways to teach them. We plan to use the BILT to define what we will teach. The BILT is our interface with local employers to determine and prioritize those critical skills in terms of what they need today and what they predict will be required in the near future.

We plan to use the DACUM to define how we will teach. The DACUM is our interface to other educators who can work with us to identify the best teaching practices, make the program more portable, and make the courses more transferrable to other institutions. We want to integrate our work with high schools and vocational schools as well as 4-year colleges and universities, and we believe that a DACUM is the best way to accomplish this.

Finally, we plan to have the BILT review the DACUM results to ensure the BILT critical skills priorities have been met.

 PROGRAM DURATION: This curriculum is based on our experience designing certificate programs for industry as well as educational institutions. These programs consist of 8-10 courses that can be completed in two semesters and provide the basic requirements for a given technology. They are designed to provide students with the critical skills required by employers in that field as soon as is practical. The students can thus be more effectively employed earlier. The certificate courses fit into the related Associate's Degree so that the students can complete the degree requirements during their employment.

RECRUITING: We will conduct outreach to prospective student participants via existing robotics competitions/programs, partner high schools, community engagement and STEM specific grants such as the Mass. STEM Starter Academy that focus heavily on underrepresented student populations. We are already engaged with these programs/partners, just not for explicit recruitment activities.

Further, QCC will reach out to more than 3,000 undeclared and general studies students, more than half of which are underrepresented populations (Hispanics/Latinos, low-income men and women, 1st generation college students, English Language Learners, economically disadvantaged, individuals with disabilities, African Americans, and Veterans). Outreach will include emails to faculty, staff and students highlighting opportunities for student referrals.

We will utilize existing relationships and collaborations with local community based organizations who work with these populations, including CBOs, local churches, community development programs, and local Veterans Serving organizations to recruit students/participants. We will also utilize major sources of referrals to our programs including the Worcester Public Schools, One Stop Career Center, local Adult Basic Education programs, Employer Partners and QCC's Center for Workforce Development and Continuing Education. We will distribute program information as well as provide targeted outreach to prospective new students from Worcester, including at MassHire Central Region Career Center, Worcester Housing Authority, and Worcester Community Action Council.