

Docket Item:

Community College Approval: Portland Community College, Certificate of Completion in Mechatronics, within 15.0407, Mechatronics, Robotics, and Automation Engineering.

Summary:

Portland Community College proposes a new Certificate of Completion in Mechatronics. Higher Education Coordinating Commission (HECC) staff completed a review of the proposed program. After analysis, HECC staff recommends approval of the degree as proposed.

Staff Recommendation:

The HECC recommends the adoption of the following resolution:
RESOLVED, that the Higher Education Coordinating Commission approve the following degree: CCo in Mechatronics.



Portland Community College seeks the Oregon Higher Education Coordinating Commission's approval to offer an instructional program leading to a Certificate of Completion in Mechatronics

Program Summary

The 1-year certificate aims to prepare students for entry-level jobs in advanced, automated manufacturing environments. The certificate also provides a foundation for more training that would prepare students to use these skills in specialized manufacturing environments that involve automation, including industries such as (but not limited to) aerospace, biotech, food and/or beverages, or semiconductors. In addition the certificate is aimed at the growth of robotics/mechatronics programs at the highschool level, and creates a dual credit pipeline that should promote enrollment growth in related CTE programs at PCC. We have particularly designed the certificate to promote the student pipeline to Microelectronics, Electronics and Apprenticeships.

1. *Describe the need for this program by providing clear evidence.*

Industry and community leaders, particularly in Hillsboro and Beaverton, approached Portland Community College due to intense demand for workers with skills in the high tech manufacturing sector. Jobs in this sector are in high demand in this geographic area. Providing this education and training allows local residents to "skill up" and increase earning potential for local residents rather than seeking employees from outside of the area. Workers are needed in high tech manufacturing to operate, troubleshoot and maintain a variety of automated equipment. The first generation of self-taught automation technologists is retiring, leaving a gap of experienced technicians to replace them. The state of Oregon identified Technology-Skilled Mechanics and Maintenance Technicians as one of the 10 key occupational clusters in the state in its first report in 2015. Because of its emerging and interdisciplinary nature, while jobs requiring Mechatronic skills may be designated as "Mechatronic" positions, they are more often referred to by other category names in traditional labor statistics. Annual salary range for Electro-Mechanical Technicians is \$59,700 in the Portland Tri-County area.

2. *Does the community college utilize systemic methods for meaningful and ongoing involvement of the appropriate constituencies?*

The program has a long-standing Advisory Committee that meets on a regular basis. Members of the committee were actively engaged in the process of concepting and creating this certificate. The committee will continue to stay engaged through regular meetings and ad hoc communication. The program will also consult regularly with area employers to assess how the program meets employment demands. The following employers participated in one or more advisory committee meetings as part of the process of developing this certificate: Boeing, Cascade Coil, City of Hillsboro, Davis Tool, Elite

Plastics, Emergency Machine Tools Repair, Hillsboro Chamber, Jewett-Cameron Companies, Leupold & Stevens, Micro Systems Engineering, Inc., OMIC Oregon Manufacturing Extension Partnership (OMEPE), Pacific Foods, Planar/Leyard, Port of Portland, Qorvo Semiconductor, Selway Machine Tool, Solarworld, Stimson Lumber, and Sulzer Pumps.

3. *Is the community college program aligned with appropriate education, workforce development, and economic development programs?*

This program is designed to enhance the pipeline into the technical programs that already involve mechatronics-related skills. While both EET and MT have two-year options that focus on automation and mechatronics-related flavors of the underlying EET and MT AAS degrees, neither program was designed or intended as an entry into that field outside the context of EET or MT. Similarly, neither program offers a 1-year certificate focused on generalized mechatronics-related outcomes. The proposed certificate will fill that gap. Employers will see graduates with the certificate best suited for entry level positions that in the past have required a high school degree and a demonstrated aptitude for electromechanical systems. Alternatively students may continue into specialized degrees within MT, EET, or even a (future) 2-year AAS offering in mechatronics. The current programs the certificate will align with are: Microelectronics (MT) AAS and Automated Manufacturing Technology (AMT), AAS Option Electronic Engineering Technology (EET), AAS and Mechatronics/Automation/Robotics Engineering Technology AAS, Option Industrial Mechanics and Maintenance Technology Apprenticeship AAS.

4. *Does the community college program lead to student achievement of academic and technical knowledge, skills, and related proficiencies?*

Learner outcomes are clearly defined on both the course and program level. Students will obtain fundamental skills for troubleshooting and maintenance tasks across the following fields: electronic, electrical, computer, networking, electromechanical, and mechanical systems. Upon further training, either in a follow-on program or through on-the-job training, they can perform basic maintenance and troubleshooting tasks on specialized advanced manufacturing systems. Our advisory committee also continually emphasizes the need for technical employees to have “soft skills”. Most MT courses include outcomes that address teamwork, and the core outcome of communication

5. *Does the community college identify and have the resources to develop, implement, and sustain the program?*

The college has the resources to start and maintain the program. Construction has started to create lab space and initial equipment purchases have been funded through a PDX Oregon Talent Council grant and matching funds from the 2008 PCC Bond. The City of Beaverton has held approximately \$50,000 in its 2018/19 budget for program support. The City of Hillsboro has verbally committed financial support to the effort.

Assurances

Portland Community College has met or will meet the four institutional assurances required for program application.

1. *Access.* The college and program will affirmatively provide access, accommodations, flexibility, and additional/supplemental services for special populations and protected classes of students.
2. *Continuous Improvement.* The college has assessment, evaluation, feedback, and continuous improvement processes or systems in place. For the proposed program, there will be opportunities for input from and concerning the instructor(s), students, employers, and other partners/stakeholders. Program need and labor market information will be periodically re-evaluated and changes will be requested as needed.
3. *Adverse impact and detrimental duplication.* The college will follow all current laws, rules, and procedures and has made good faith efforts to avoid or resolve adverse *intersegmental* and *intra-segmental* impact and detrimental duplication problems with other relevant programs or institutions.
4. *Program records maintenance and congruence.* The college acknowledges that the records concerning the program title, curriculum, CIP code, credit hours, etc. maintained by the Office are the official records and it is the college's responsibility to keep their records aligned with those of the Office. The college will not make changes to the program without informing and/or receiving approval from the Office.