Program: TAACCCT 4 AAMMP UP: Mechatronics

Reviewer: Kenny Keith

Date: 7/12/2018

**Program Description:**

The Pima Community College Mechatronics Program currently supports one certificate. In 2015, the college was awarded a DOL funded TAACCCT 4 Grant to better serve TAA-eligible workers, veterans, low-skilled, unemployed, and under-employed individuals. The key tasks included supporting the development of aviation, welding, and mechatronics curriculum. Program has also worked with working with local industry partners to ensure the program meets local needs and supporting students through course completion and employment. TAACCCT 4 grant funds were used to develop the current Mechatronics certificate, purchase Lab equipment, and support the program development.

**Evaluator Credentials and Professional Qualifications:**

13 years as Industrial Maintenance and Operations faculty and program coordinator, 5 years Mechatronics faculty, NCCER Industrial Maintenance Mechanic Trainer, NCCER Electrical and Instrumentation Trainer, and Amatrol Instructor Trainings.

**Review Methodology:**

The evaluator will provide the following: A site visit to evaluate the physical space of the PCC Aviation welding and mechatronics curriculum Programs, a completed rubric that evaluates program efficacy, and an analysis of the program's achievements. The evaluator will also provide recommendations focused on strengthening the program and relationships with partners.

The rubric provided below is the foundation of the evaluation process. The scare and definitions are as follows:

**Exceptional:** Review component is a "best practices" and represents a model for replication.

**Very Good:** Review component is complete and effective.

**Good:** Review component is adequate but presents opportunities for improvement.

**Ineffective:** Review component is weak and in need of significant improvement.

**Insufficient Evidence:** Review component was not covered or information provided in the documents was insufficient for assessment.

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**Rubric:**

**Section 1: Syllabus/ Course Outline**

| Topic | Exceptional | Very Good | Good | Ineffective | Insufficient |
|---|---|---|---|---|---|
| Course Outcomes/ SLO's are Clearly Stated | | X | | | |
| Syllabus includes basic element of the course (e.g. course title, credits, goals, objectives, learning outcomes, prerequisites, course description). | | X | | | |
| Course Schedule is appropriately paced. | | X | | | |
| Course Content is appropriate and includes industry standards | | X | | | |
| The course organization and design is clear, coherent, and structured in an appropriate way. | | X | | | |
| The learning activities and/or labs promote the achievement of stand learning objectives. | | X | | | |

**Comments:** NIMS was incorporated effectively and provides a recognized credential for students. Based on classroom observation the class pacing is a little slow. This may be due to the differing skill levels of the students. Course outcomes and SLO's are appropriate and support student success.

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**Section 2: Assessments and Instructional Materials**

| Topic | Exceptional | Very Good | Good | Ineffective | Insufficient |
|---|---|---|---|---|---|
| Curriculum aligns with appropriate industry certification and instructional materials are current | | X | | | |
| Instructional materials and lab meet/reflect current industry practices and standards. | | X | | | |
| Learning activities promote achievement of stated module/unit objectives and support student success. | | X | | | |
| Assessments are present and appropriate to content | | X | | | |
| All appropriate safety equipment and protocols are taught and used in the classroom. | | X | | | |

**Comments:** A top priority is safety, which is practiced throughout the program. Proper PPE (Personal Protective Equipment) is utilized/practiced. Curriculum is current and all assessments are effective in measuring student's skills. Program provides students with the opportunity to earn a number of industry recognized credentials including OSHA10. NC3, NIMS, and soldering certificates. Student completion rate for certificates is a concern, as students are not earning NIMs certificates at a high rate. However, the program is evaluating its own curriculum to better support students in getting their certificates.

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**Section 3: Industry Alignment**

| Topic | Exceptional | Very Good | Good | Ineffective | Insufficient |
|---|---|---|---|---|---|
| Course materials, activities, and learning outcomes are applicable to the target industry. | | X | | | |
| The laboratories and physical spaces provide students with access to industry standard tools and equipment. | | | X | | |
| Instructional materials and lab meet/reflect current industry practices and standards. | | | X | | |
| Assessments reflect industry expectations and include authentic measure of student skills. | | | X | | |

**Comments:** Program uses Amatrol equipment and curriculum but program is not utilizing the online learning management system associated with the equipment. The online Management system should be incorporated because helps tie everything together by providing quizzes that monitor students' progress, tracks student progress through both lessons and labs, and allows students to spend more time in the physical lab.

Labs are well paces and provide students with the necessary tools to gain the needed hands on experience with the Amatrol equipment. Lab size needs to be expanded as it lacks the necessary space to meet all of the program's needs.

Program has an Advisory committee with several local employers that participate and one very strong relationship with one large employer in Tucson.

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**Analysis and Recommendations:**

**Section 4: Evaluation Outcomes**

| | |
|---|---|
| Program Strengths | • Location to industry<br>• Great Advisory<br>• Uses equipment appropriate for industry (Amatrol Equipment and Curriculum)<br>• MCT 101 is a good foundational course<br>• NC3 Online<br>• NIMS, OSHA 10, Soldering Certificate<br>• Money from AZ Governor to build program<br>• Active industry support-SAMP(Southern Arizona Manufacturing Partnership)<br>• Participation in Arizona Sun Corridor to develop aligned curriculum and certificates and degrees<br>• High degree of support from administration of the program (commitment to fund center of excellence in the midst of financial difficulties for the college<br>• Population density of Pima County<br>• Attractiveness of area to businesses wanting to relocate<br>• Proximity to Mexico for collaboration with institution across the border.<br>• Availability of adjunct faculty- 2 currently hired<br>• 90/30 program with NAU<br>• The number of high schools nearby with related programs that can serve as feeders for this program |
| Recommendations for Improvements | • Program needs a 2 year degree plan<br>• Need more electives<br>• Lack of marketing – Need to branch out to the public<br>• Program needs more lab space<br>• Not using Amatrol LMS (or any other LMS)<br>• Change program name. Mechatronics is unclear (see marketing)<br>• Gaps in NIMS- Needs to work on NIMS Duty 9/ incorporate welding.<br>• Not listed as a program in college catalog<br>• Lack Human Machine Interface- necessary skill set for employees<br>• Lacking in soft skills training –Should be incorporated into class<br>• Only offering Mechanical Drives 1 and 2, should offer 3 and 4 as well<br>• Quickly develop subsequent certs and degrees<br>• Schedules for future semesters still not determined-this needs to be resolved so that students know early on.<br><br>Opportunities:<br>• Marketing<br>• More portable credentials<br>• Still building program |

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|---|---|
| | • PMMI Certificate<br>• Air Force Base<br>• Industry<br>• NCCER, especially E and I<br>• Lab with set hours, 9:00 am to 9:00 pm for example<br>• Encourage more internships and apprenticeships with Industry Partners<br>• More online of content<br>• Streamlining internal processes- students sent from industry partners need a clear process and schedule. Per student feedback, employers are not explaining the program, just requiring employee participation, which leads to student confusion.<br>• Rapidly rolling out courses limits faculty planning ability.<br>• Developing relationships with high schools, universities and additional industry. |
| Comments | **The program is good for being in its infancy. However, the College needs to continue to build and expand its advisory and industrial partnerships. Industry partnerships are key to program sustainability. Program has a very strong relationship with one large employer in Tucson. However, they should begin to work with other partners to develop training programs and reach out to local high schools to develop robotics programs/competitions to help build a pipeline for the program. As always, in-house training poses a threat to any program.**<br><br>**Primary recommendations include- expand opportunities for students to earn additional portable credentials, NCCER Mechanical drives 3 and 4 should be look at as they provide two more levels of expertise for the student and an additional certificate. NCCER Electrical and instrumentation can also be incorporated to provide access to additional certificates. Program should also continue to build a strong adjunct faculty pool.** PCC has committed to spending just about $700,000 on new equipment and an e-learning component for the program. It's is strongly recommended that PCC use the Amatrol learning management system. |

Signature: Kenny L Keith Date: 7-25-18