

Maine Community College System
Five Year Program Review

College: Central Maine Community College
CIP: 15.0403

Program: Electromechanical Technology
Credential: Associate in Applied Science (AAS)

Review Team: Betsy Libby, Travis Brown, Eric Berg, Jennifer Jefferson, Kate McPherson, Rachel King, Maria D’Auria, Dwayne Conway, Aaron Silverman, Kevin Latendresse, Jeff Joiner

Date: March 2023

Period of Review: AY 2017/2018-2021/2022

Program Overview:

1) **Program description** (*from the most recent college catalog*):

The Associate in Applied Science Degree in Electromechanical Technology prepares students for careers in electricity and electronic fields that require technicians who are capable of dealing with the challenge of rapid changes in technology. Emphasis is placed on providing a solid theoretical background in electricity and electronics balanced with industrial control technologies.

2) **Program Learning Outcomes: all program learning outcomes are expected to be assessed within the five-year cycle. Please attach an Assessment Data and Reflection Template for each program learning outcome. Explain how the department used the assessment results to improve teaching, learning, and the curriculum.**

List the program learning outcomes:	Method of assessment: list the courses and activities/assignments used to assess the learning outcomes
<ol style="list-style-type: none"> 1. Demonstrate oral and written presentation skills. 2. Practice appropriate electrical safety procedures. 3. Employ entry-level skills in the electrical, electronic, and process control fields. 4. Analyze electrical and electronic prints and specifications. 5. Compute operating voltages and currents for electrical and electronic circuits. 6. Select and utilize test equipment to measure electrical quantities and troubleshoot circuits. 7. Design and hook up control systems found in Process Control. 8. Employ personal computer skills to operate technical application software and set up networking. 9. Demonstrate a commitment to life-long learning through formal education, on-the-job, in-service, or through independent participation in other technical/trade resources. 	<p>Please see 5-year Assessment Plan for Program Learning Outcomes (attached).</p>

3) Credentials Awarded within the IPEDS year, i.e. July 1-June 30:

Credentials Awarded					
Credential	AY1718	AY1819	AY1920	AY2021	AY2122
AAS	16	28	21	20	8
Certificate	3	1	2	2	2

4) Program Graduates Employed:

Number of Completers with any Wage Data	63
% of Completers with any Wage Data	90%
# of Completers with First Year Earnings	50
Median First Year Earnings	\$43,348

5) Partnerships, collaborations, associations and memberships

a) Advisory Meeting Dates and Attendance (past 3 years)

<i>Date(s) of Meeting</i>	<i># of college attendees</i>	<i># of Non-college attendees</i>
11/18/20	3	3
5/7/21	3	1
11/2/21	1	5

b) Program external accreditation, associations, and memberships (if applicable):

6) Other Indicators of student success, direct and/or indirect, which may include:

	AY1718	AY1819	AY1920	AY2021	AY2122	AY2223*
Licensure/certification pass rates (if applicable)	n/a	n/a	n/a	n/a	n/a	n/a
Program Advisory Committee Member Survey (on scale of 1-5 averaged):						
Program Curriculum				4.3		4
Technical currency of the program				4.5		4
Preparation of program graduates for work in the field				4		4
Communication from program administration/faculty				4.3		5
Overall quality of the program				4.3		4
Other (please specify): Major equipment purchased recently for this program with federal funds				4		3

7) Student demographics:

Admissions					
AAS	AY1718	AY1819	AY1920	AY2021	AY2122
Fall Applications	61	62	86	69	62
% chg in Fall Applicants from PY	--	2%	39%	-20%	-10%
Enrolled (Yield)	31	32	35	27	21
% chg in Enrolled from PY	--	0%	-60%	50%	33%
Certificate					
Certificate	AY1718	AY1819	AY1920	AY2021	AY2122
Fall Applications	17	20	14	13	18
% chg in Fall Applicants from PY	--	18%	-30%	-7%	38%
Enrolled (Yield)	5	5	2	3	4
% chg in Enrolled from PY	--	0%	-60%	50%	33%

Student Enrollment ¹					
AAS	AY1718	AY1819	AY1920	AY2021	AY2122
Unduplicated Headcount Enrolled in Program	77	76	73	72	52
% chg in Headcount from PY	--	-1%	-4%	-1%	-28%
Enrolled Credit Hours	914	897	920	797	580
% chg in Credit hours from PY	--	-2%	3%	-13%	-27%
FTE	61	60	61	53	39
% chg in FTE from PY	--	-2%	2%	-13%	-26%
Certificate					
Certificate	AY1718	AY1819	AY1920	AY2021	AY2122
Unduplicated Headcount Enrolled in Program	6	8	5	3	9
% chg in Headcount from PY	--	33%	-38%	-40%	200%
Enrolled Credit Hours	57	64	52	34	112
% chg in Credit hours from PY	--	12%	-19%	-35%	229%
FTE	4	4	3	2	7
% chg in FTE from PY	--	0%	-25%	-33%	250%

¹ = students within the program in the fall of the academic year

Student Success					
Cohort Year - AAS	AY1718	AY1819	AY1920	AY2021	AY2122
Cohort Enrollment	48	43	55	39	34
Retained to the next semester	54%	63%	64%	62%	74%
Retained to the next year	46%	58%	49%	41%	47%
100% of program time	33%	42%	22%	18%	
150% of program time	38%	51%	25%		
200% of program time	38%	53%			
Transfer Rate (non-graduates) ²	13%	12%			
Transfer Rate (graduates)	8%	2%			
Enrolled in Another Program ²	0%	2%			
Graduated from Another Program ²	2%	5%			
Cohort Enrollment - Certification	5	10	3	8	5
Retained to the next semester	60%	60%	67%	63%	60%
Retained to the next year	40%	20%	0%	38%	40%
100% of program time	20%	20%	33%	13%	
150% of program time	20%	20%	33%		
200% of program time	20%	20%			
Transfer Rate (non-graduates) ²	0%	0%			
Transfer Rate (graduates)	0%	10%			
Enrolled in Another Program ²	0%	0%			
Graduated from Another Program ²	0%	20%			

². Determined at the maximum graduation point in this table, i.e. 200%

8) Strengths, challenges, and planned steps for continuous improvement: In your summary assessment you should reference sections of this review that informs the plan.

Program Strengths:

- CMCC's ELT students are in high demand and recruited for both short-term and long-term employment. However, Maine's factory maintenance service providers and electrical repair and construction fields need our graduates at a faster rate than we can provide.
- ELT has high enrollment numbers and strong student interest in the program.
- ELT is moving forward with proposing a new construction-focused certificate through the governance process, to better serve high demand in this field.
- The ELT lab has up-to-date training equipment and software. The students have real-world experiences in a lab setting.

Challenges:

- Strong demand also exists for a related ELT certificate that would prepare students for construction-related jobs.
- Students drop or fail at a high rate in the first and second semester. Challenges include student preparedness and student balance of work and school.
- The Advisory Committee provides helpful connection to industry but could include an even wider representation of industry experience.

Planned steps for continuous improvement:

- Provide in-demand construction-related education through a proposed new certificate.
- Encourage students to run a student study group, and explore ideas for a summer bootcamp or supplemental instruction for incoming students.
- Connect students with math and science center tutors, and explore embedding a math tutor in select courses to assist students struggling with math.
- Require students to adhere to tighter assignment due dates to encourage better time management and organization.
- Make it a department-wide habit to issue Early Alerts to address student retention issues early in the semester.
- Explore additional curriculum changes next year to continue updating curriculum as needed, especially around the ELT 117 National Electric Code course and the BCA 120 Introduction to Computer Applications course.
- Continue to use Advisory Committee feedback to make program adjustments, and expand the advisory committee with new members representing wider experience.

Five-year Assessment Plan for Student Learning Outcomes

Electromechanical Technology

March 2023

Name of Program or General Education Domain

Date

Learning goal:

Student learning outcomes:	Academic year during which assessment will occur	Source(s) and type of assessment artifact(s) that will be collected (e.g.: embedded questioning, capstone assignments, standardized testing, performance observation, portfolio reviews, etc.)	Method(s) to be used for assessing artifact(s)	Assessment Goal (targets/criteria) for direct measure	Assessment Outcome (<i>Number of Students Achieving an "acceptable" or better</i>)	Assessment Goal was:		
						Met	Not Met	Pending Review
AAS & C Demonstrate oral and written presentation skills	2 nd	ENG 201 Technical Writing	*Model proficiency in style of writing used in business and industry	75% of students will achieve a 70% or better on the assessment method to achieve the outcome	100% of students scored a 70% or higher on the assessment methods	X		
AAS & C Practice appropriate electrical safety procedures	1 st	ELT 123 Electrical Controls I	*Observation through visual and oral evaluation of standard safety practices	75% of students will receive a 70% or better on the assessment method to	47% of students received a 70% or better on the assessment method		X	

			* Written exams to evaluate the outcomes	achieve the outcome				
AAS & C Employ entry-level skills in the electrical, electronic, and process control fields	2 nd	ELT 231 Process Measurement	*Describe function and purpose of electrical, electronic, and process control devices * Written exams to evaluate the outcomes	75% of students will achieve a 70% or better on the assessment method to achieve the outcome	69% of students received a 70% or better on the assessment method		X	
AAS & C Analyze electrical and electronic prints and specifications	1 st	ELT 145 Electronic Devices I	*By utilizing prints, the student can perform troubleshooting or construction referencing the print * Written exams to evaluate the outcomes	75% of students will achieve a 70% or better on the assessment method to achieve the outcome	69% of students received a 70% or better on the assessment method		X	
AAS & C Compute operating voltages and currents for electrical and electronic circuits	1 st	ELT 115 Electricity II	*Student finds circuit quantities utilizing data provided with formulas	75% of students will get a 70% or better on the assessment method to	60% of students received a 70% or better on the assessment method		X	

			<p>matching the task at hand</p> <p>* Written exams to evaluate the outcomes</p>	achieve the outcome				
<p>AAS & C</p> <p>Select and utilize test equipment to measure electrical quantities and troubleshoot circuits</p>	2 nd	ELT 246 Linear Integrated Electronics	<p>*Students prove that they can operate and select the correct instrument for the task</p> <p>* Written exams to evaluate the outcomes</p>	75% of students will achieve a 70% or better on the assessment method to achieve the outcome	100% of students received a 70% or better on the assessment method	X		
<p>AAS & C</p> <p>Design and hook up control systems found in Process Control</p>	2 nd	ELT 232 Process Control	<p>*Students Demonstrate through oral and testing a strong understanding of process control system</p> <p>* Written exams to evaluate the outcomes</p>	75% of students will receive a 70% or better on the assessment method to achieve the outcome	88% of students received a 70% or better on the assessment method	X		
<p>AAS & C</p> <p>Employ personal computer skills to operate technical</p>	2 nd	ELT 222 Programmable Controls	*Through lab completion students	75% of students will receive a 70% or better on the assessment	66% of students received a 70% or		X	

application software and set up networking			execute skills needed to build control functionality matching instructors' expectation * Written exams to evaluate the outcomes	method to achieve the outcome	better on the assessment method			
AAS & C Demonstrate a commitment to life-long learning through formal education, on-the-job, in-service, or through independent participation in other technical/trade resources	Development of assessment method in-progress							

Most significant assessment findings? (Pedagogical, instructional, curricular changes). Please report on actions taken and on ongoing assessment plans.

- The associate degree is designed to continually change and update to meet industry needs and align with advisory committee recommendations.
- The program is evaluating methods for improving student performance, with particular attention to aligning student support with the “not met” categories above.
- The department chair is proposing (currently in the governance process) an electrical construction-related education through a new certificate.