

The Mechatronics Engineering Technology curriculum prepares individuals for jobs requiring electrical, mechanical, and computer skills necessary to work on complex systems found in manufacturing environments. Students in the program will gain knowledge and hands-on training for the in-demand field of mechatronics, which combines electricity, electronics, robotics, mechanics instrumentation, process control and industrial automation.

Students will learn multi-craft technical skills in blueprint reading, mechanical systems, electrical/electronic systems, hydraulics/pneumatics, and automation.

Through alignment with PMMI's (Packaging Machinery Manufactures Institute) Mechatronics Certification Program, ACC's Associate of Applied Science degree in Mechatronics Engineering Technology offers a set of stackable credentials that are recognized by the US Department of Labor and endorsed by the National Association of Manufacturer's' skills.

Required Courses	Credits	Pre or Co Reqs Rqd	Course Availability		
			Fall	Spr	Sum
<b>General Education Courses</b>					
• BUS 121 - Basic Workplace Skills	1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• ENG 121 - English Composition I: GT-CO1*	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• MAT 108 - Technical Mathematics or Higher*	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• PHI 113 - Logic: GT-AH3*	3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• PHY 105 - Conceptual Physics OR PHY 112 - Physics: Algebra-Based II OR PHY 212 - Physics: Calculus-Based II: GT-SC1	4-5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Major Courses</b>					
• CAD 255 - SolidWorks/Mechanical	3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• EIC 102 - Electrical Print Reading	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• ELT 106 - Fundamentals of DC/AC	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• ELT 248 - Automation Control Circuits	3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• ELT 252 - Motors and Controls	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• ELT 254 - Industrial Wiring	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• ELT 255 - Fluid Power	3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• ELT 258 - Programmable Logic Controllers	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• ELT 259 - Advanced Programmable Logic Controllers	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• ELT 267 - Introduction to Robotics	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• ELT 268 - Robotics Technologies	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• ELT 280 - Cooperative Education	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• IMA 120 - Industrial Rotating Equipment	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• OSH 117 - 10 Hour OSHA Voluntary Compliance†	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Additional Required Courses</b>					
• Restricted Elective (See Notes for specific requirements)	3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Restricted Elective (See Notes for specific requirements)	3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**Pre-Requisites, Co-Requisites, and Recommendations (grade C or better required)**

Where requirements are listed as course categories (e.g. Electives, Arts/Humanities) rather than as specific courses, please note that depending upon course choice, pre-requisites may be required.

ENG 121 - English Composition I: GT-CO1\*

- Co-Requisite: CCR 094 - Studio 121

ELT 254 - Industrial Wiring

- Pre-Requisite: EIC 102 - Electrical Print Reading
- Pre-Requisite: ELT 106 - Fundamentals of DC/AC

ELT 252 - Motors and Controls

- Pre-Requisite: ELT 106 - Fundamentals of DC/AC

ELT 267 - Introduction to Robotics

- Pre-Requisite: ELT 106 - Fundamentals of DC/AC

ELT 258 - Programmable Logic Controllers

- Pre-Requisite: ELT 106 - Fundamentals of DC/AC
- Pre-Requisite: ELT 252 - Motors and Controls

IMA 120 - Industrial Rotating Equipment

- Pre-Requisite: PHY 105 - Conceptual Physics with Lab: GT-SC1\*

ELT 268 - Robotics Technologies

- Pre-Requisite: ELT 106 - Fundamentals of DC/AC
- Pre-Requisite: ELT 267 - Introduction to Robotics

ELT 259 - Advanced Programmable Logic Controllers

- Pre-Requisite: ELT 258 - Programmable Logic Controllers

ELT 280 - Cooperative Education

- Pre-Requisite: ELT 252 - Motors and Controls
- Pre-Requisite: ELT 254 - Industrial Wiring
- Pre-Requisite: ELT 255 - Fluid Power

PHY 105 - Conceptual Physics OR PHY 112 - Physics: Algebra-Based II OR PHY 212 - Physics: Calculus-Based II: GT-SC

- Additional Pre-Requisite for PHY 112: PHY 111 - Physics: Algebra-Based I with Lab: GT-SC1\*
- Additional Pre-Requisite for PHY 212: PHY 211 - Physics: Calculus-Based I with Lab: GT-SC1\*
- Requirement: College-level readiness as measured by Accuplacer, ACT, or SAT scores; approved high school course work that is less than five years old; or successful completion of appropriate college-readiness course.

**Program Outcomes**

- Install and operate instrumentation and process control devices across the spectrum of industries.
- Use quality and safety standards necessary for the operating, maintaining and repairing of automated equipment.
- Program, configure, troubleshoot and repair automated industrial equipment for machining, assembly, chemical processing and logistics distribution.
- Diagnose root problems to maintain the production flow.
- Communicate effectively and appropriately with team members.

**Notes**

- \*This course requires college level readiness as measured by Accuplacer, ACT, or SAT scores; approved high school

course work that is less than five years old; or successful completion of appropriate college-readiness course.

- †OSH 117 is only available online.
- AAA 101 – College 101: Student Experience is required for all new college students seeking degrees or transfer.
- Course availability is subject to change.
- In order to meet program requirements, students registered for ENG 121 or ENG 131 must also register for CCR 094 unless they can demonstrate otherwise meeting the CCR 094 standard through assessment testing, prior college coursework, or recent High School coursework. See an Advisor for details.
- Refer to 20/21 catalog for specific requirements and important information about this degree.
- Restricted Electives: Choose two courses from MTE 244 - Lean Manufacturing, PRO 230 - Quality in Process Technology, CAD 262 - 3D Printing.

### Graduation Requirements

- All courses required for this A.A.S. degree must be completed with a grade of "C" or better to meet admission and graduation requirements.
- To graduate, students must apply for graduation (form available at [www.arapahoe.edu/departments-and-programs/graduation](http://www.arapahoe.edu/departments-and-programs/graduation)) by the deadline and meet all degree requirements.

RECOMMENDED COURSE SEQUENCE FULL-TIME TRACK

Year 1: Fall	Credits	Course
	4	EIC 102 - Electrical Print Reading
	4	ELT 106 - Fundamentals of DC/AC
	3	ENG 121 - English Composition I: GT-CO1
	4	MAT 108 - Technical Mathematics or Higher
	1	OSH 117 - 10 Hour OSHA Voluntary Compliance
Year 1: Spring	Credits	Course
	1	BUS 121 - Basic Workplace Skills
	3	ELT 252 - Motors and Controls
	3	ELT 254 - Industrial Wiring
	3	ELT 255 - Fluid Power
	4-5	PHY 105 - Conceptual Physics OR PHY 112 - Physics Algebra-Based II OR PHY 212 - Physics Calculus-Based II: GT-SC1
Year 2: Fall	Credits	Course
	3	CAD 255 - SolidWorks/Mechanical
	3	ELT 248 - Automation Control Circuits
	3	ELT 258 - Programmable Logic Controllers
	1	ELT 267 - Introduction to Robotics
	3	IMA 120 - Industrial Rotating Equipment
	3	PHI 113 - Logic: GT-AH3
Year 2: Spring	Credits	Course
	3	ELT 259 - Advanced Programmable Logic Controllers
	3	ELT 268 - Robotics Technologies
	3	ELT 280 - Cooperative Education
	3	Restricted Elective ~Choose One Course~ CAD 262 - 3D Printing/Additive Manufacturing MTE 244 - Lean Manufacturing PRO 230 - Quality in Process Technology
	3	Restricted Elective ~Choose One Course~ CAD 262 - 3D Printing/Additive Manufacturing MTE 244 - Lean Manufacturing PRO 230 - Quality in Process Technology

RECOMMENDED COURSE SEQUENCE PART-TIME TRACK

Year 1: Fall	Credits	Course
	4	EIC 102 - Electrical Print Reading
	4	ELT 106 - Fundamentals of DC/AC
	4	MAT 108 - Technical Mathematics or Higher
Year 1: Spring	Credits	Course
	1	BUS 121 - Basic Workplace Skills
	3	ELT 254 - Industrial Wiring
	3	ENG 121 - English Composition I: GT-CO1
	4-5	PHY 105 - Conceptual Physics OR PHY 112 - Physics Algebra-Based II OR PHY 212 - Physics Calculus-Based II: GT-SC1
Year 2: Fall	Credits	Course
	3	CAD 255 - SolidWorks/Mechanical
	3	ELT 248 - Automation Control Circuits
	1	ELT 267 - Introduction to Robotics
	1	OSH 117 - 10 Hour OSHA Voluntary Compliance†
Year 2: Spring	Credits	Course
	3	ELT 252 - Motors and Controls
	3	ELT 255 - Fluid Power
	3	Restricted Elective
		~Choose One Course~
		CAD 262 - 3D Printing/Additive Manufacturing
		MTE 244 - Lean Manufacturing
		PRO 230 - Quality in Process Technology
	3	Restricted Elective
		~Choose One Course~
		CAD 262 - 3D Printing/Additive Manufacturing
		MTE 244 - Lean Manufacturing
		PRO 230 - Quality in Process Technology
Year 3: Fall	Credits	Course
	3	ELT 258 - Programmable Logic Controllers
	3	IMA 120 - Industrial Rotating Equipment
	3	PHI 113 - Logic: GT-AH3
Year 3: Spring	Credits	Course
	3	ELT 259 - Advanced Programmable Logic Controllers
	3	ELT 268 - Robotics Technologies
	3	ELT 280 - Cooperative Education