Academic Plan - Associate of Applied Science Mechatronics Engineering Technology

Catalog Year: 2021/2022

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 recognized by the US Department of Labor and endorsed by the National Association of Manufacturer’s’ skills.

Total Credits: 61-62

General Education Courses

* 1 Credits, BUS 121 - Basic Workplace Skills (1 Cr.), available spring
* 3 Credits, ENG 121 – English Composition I: GT-CO1 OR ENG 131: GT-CO1 – Technical Writing I OR ENG 122 – English Composition II: GT-CO3, available fall spring summer
* 3 Credits, PHI 113 - Logic: GT-AH3\* (3 Cr.), available fall spring summer
* 4 Credits, MAT 108 - Technical Mathematics or Higher\* (4 Cr.), available fall spring summer
* 4-5 Credits, PHY 105 - Conceptual Physics OR PHY 112 - Physics: Algebra-Based II OR PHY 212 - Physics: Calculus-Based II: GT-SC1, available fall spring

Major Courses

* 1 Credits, ELT 267 - Introduction to Robotics, available fall
* 1 Credits, OSH 117 - 10 Hour OSHA Voluntary Compliance, available fall spring summer
* 3 Credits, CAD 255 - SolidWorks/Mechanical (3 Cr.), available fall
* 3 Credits, ELT 248 - Automation Control Circuits, available fall
* 3 Credits, ELT 252 - Motors and Controls, available spring
* 3 Credits, ELT 254 - Industrial Wiring, available spring
* 3 Credits, ELT 255 - Fluid Power, available spring
* 3 Credits, ELT 258 - Programmable Logic Controllers, available fall
* 3 Credits, ELT 259 - Advanced Programmable Logic Controllers, available spring
* 3 Credits, ELT 268 - Robotics Technologies, available spring
* 3 Credits, ELT 280 - Cooperative Education, available fall spring summer
* 3 Credits, IMA 120 - Industrial Rotating Equipment, available fall
* 4 Credits, EIC 102 - Electrical Print Reading, available fall
* 4 Credits, ELT 106 - Fundamentals of DC/AC (4 Cr.), available fall

Additional Required Courses

* 3 Credits, Restricted Elective (See Notes for specific requirements), available fall spring summer
* 3 Credits, Restricted Elective (See Notes for specific requirements), available fall spring summer

Pre-Requisites, Co-Requisites, and Recommendations

* MAT 108 - Technical Mathematics or Higher\* (4 Cr.)
	+ Co-Requisite: MAT 091 - Applied Quantitative Lab
	+ Pre-Requisite: MAT 050 - Quantitative Literacy (4 Cr.) OR MAT 055 - Algebraic Literacy (4 Cr.) OR
* 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-II: GT-SC1
	+ 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 coursework that is less than five years old; or successful completion of appropriate college-readiness course.

Notes

* Course availability is subject to change.
* Refer to 21/22 catalog for specific requirements and important information about this degree.
* \*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 the appropriate college-readiness course.
* Restricted Electives: Choose two courses from MTE 244 - Lean Manufacturing, PRO 230 - Quality in Process Technology, CAD 262 - 3D Printing.
* †OSH 117 is only available online.
* AAA 101 – College 101: Student Experience is required for all new college students seeking degrees or
* 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.

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 [here](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

* 4 Credits, EIC 102 - Electrical Print Reading
* 4 Credits, ELT 106 - Fundamentals of DC/AC (4 Cr.)
* 3 Credits, ENG 121 – English Composition I: GT-CO1 OR ENG 131: GT-CO1 – Technical Writing I OR ENG 122 – English Composition II: GT-CO3
* 4 Credits, MAT 108 - Technical Mathematics or Higher\* (4 Cr.)
* 1 Credits, OSH 117 - 10 Hour OSHA Voluntary Compliance

Year 1: Spring

* 1 Credits, BUS 121 - Basic Workplace Skills (1 Cr.)
* 3 Credits, ELT 252 - Motors and Controls
* 3 Credits, ELT 254 - Industrial Wiring
* 3 Credits, ELT 255 - Fluid Power
* 4-5 Credits, PHY 105 - Conceptual Physics OR PHY 112 - Physics Algebra-Based II OR PHY 212 - Physics Calculus-Based II: GT-SC1

Year 2: Fall

* 3 Credits, CAD 255 - SolidWorks/Mechanical (3 Cr.)
* 3 Credits, ELT 248 - Automation Control Circuits
* 3 Credits, ELT 258 - Programmable Logic Controllers
* 1 Credits, ELT 267 - Introduction to Robotics
* 3 Credits, IMA 120 - Industrial Rotating Equipment
* 3 Credits, PHI 113 - Logic: GT-AH3 (3 Cr.)

Year 2: Spring

* 3 Credits, ELT 259 - Advanced Programmable Logic Controllers
* 3 Credits, ELT 268 - Robotics Technologies
* 3 Credits, ELT 280 - Cooperative Education
* 3 Credits, Restricted Elective
	+ ~Choose One Course~
	+ CAD 262 - 3D Printing/Additive Manufacturing (3 Cr.)
	+ MTE 244 - Lean Manufacturing
	+ PRO 230 - Quality in Process Technology
* 3 Credits, Restricted Elective
	+ ~Choose One Course~
		- CAD 262 - 3D Printing/Additive Manufacturing (3 Cr.)
		- MTE 244 - Lean Manufacturing
		- PRO 230 - Quality in Process Technology

RECOMMENDED COURSE SEQUENCE PART-TIME TRACK

Year 1: Fall

* 4 Credits, EIC 102 - Electrical Print Reading (4 Cr.)
* 4 Credits, ELT 106 - Fundamentals of DC/AC (4 Cr.)
* 4 Credits, MAT 108 - Technical Mathematics or Higher\* (4 Cr.)

Year 1: Spring

* 1 Credits, BUS 121 - Basic Workplace Skills (1 Cr.)
* 3 Credits, ELT 254 - Industrial Wiring (3 Cr.)
* 3 Credits, ENG 121 – English Composition I: GT-CO1 OR ENG 131: GT-CO1 – Technical Writing I OR ENG 122 – English Composition II: GT-CO3
* 4-5 Credits, PHY 105 - Conceptual Physics OR PHY 112 - Physics Algebra-Based II OR PHY 212 - Physics Calculus-Based II: GT-SC1

Year 2: Fall

* 3 Credits, CAD 255 - SolidWorks/Mechanical (3 Cr.)
* 3 Credits, ELT 248 - Automation Control Circuits (3 Cr.)
* 1 Credits, ELT 267 - Introduction to Robotics (1 Cr.)
* 1 Credits, OSH 117 - 10 Hour OSHA Voluntary Compliance (1 Cr.)

Year 2: Spring

* 3 Credits, ELT 252 - Motors and Controls (3 Cr.)
* 3 Credits, ELT 255 - Fluid Power (3 Cr.)
* 3 Credits, Restricted Elective
	+ ~Choose One Course~
		- CAD 262 - 3D Printing/Additive Manufacturing (3 Cr.)
		- MTE 244 - Lean Manufacturing (3 Cr.)
		- PRO 230 - Quality in Process Technology (3 Cr.)
* 3 Credits, Restricted Elective
	+ ~Choose One Course~
	+ CAD 262 - 3D Printing/Additive Manufacturing (3 Cr.)
	+ MTE 244 - Lean Manufacturing (3 Cr.)
	+ PRO 230 - Quality in Process Technology (3 Cr.)

Year 3: Fall

* 3 Credits, ELT 258 - Programmable Logic Controllers (3 Cr.)
* 3 Credits, IMA 120 - Industrial Rotating Equipment (3 Cr.)
* 3 Credits, PHI 113 - Logic: GT-AH3 (3 Cr.)

Year 3: Spring

* 3 Credits, ELT 259 - Advanced Programmable Logic Controllers (3 Cr.)
* 3 Credits, ELT 268 - Robotics Technologies (3 Cr.)
* 3 Credits, ELT 280 - Cooperative Education (3 Cr.)