

# MECHATRONICS TECHNOLOGY, A.A.S. - MCT3

Combining electronic, mechanical, robotics and information system technologies, this program provides the graduate with the skill set needed for today's automated manufacturing facilities. These skills will align with current needs of manufacturers as well as align with one or more industrial standards/certifications. Instruction covers hydraulics and pneumatics, robotics and automated controls, programmable controllers, process control and mechanical applications. The student will receive practical hands-on experience and computer simulation on automated assembly line processes.

## Requirements

Courses	Course Title	Credit Hours
<b>General Education Courses</b>		
ENG 165 or ENG 101	Professional Communications English Composition I	3
MAT 170 or MAT 110	Algebra, Geometry and Trigonometry I College Algebra	3
MAT 171 or MAT 111	Algebra, Geometry and Trigonometry II College Trigonometry	3
	Elective Humanities/Fine Arts ( <a href="https://catalog.ptc.edu/student-handbook/advising-registration/general-education-courses/">https://catalog.ptc.edu/student-handbook/advising-registration/general-education-courses/</a> )	3
	Elective Social/Behavioral Sciences ( <a href="https://catalog.ptc.edu/student-handbook/advising-registration/general-education-courses/">https://catalog.ptc.edu/student-handbook/advising-registration/general-education-courses/</a> )	3
	<b>Subtotal</b>	<b>15</b>
<b>Required Core Subject Areas</b>		
AMT 105	Robotics and Automated Control I	3
EEM 117 or EET 111	AC/DC Circuits I DC Circuits	4
EEM 251 or EET 235	Programmable Controllers Programmable Controllers	3
IMT 131	Hydraulics and Pneumatics	4
IMT 170	Statistical Process Control	3
	<b>Subtotal</b>	<b>17</b>
<b>Other Courses Required for Graduation</b>		
AMT 205	Robotics and Automated Control II	3
EEM 118 or EET 112	AC/DC Circuits II AC Circuits	4
EEM 140	National Electrical Code	3
EEM 151 or EET 231	Motor Controls I Industrial Electronics	4
EEM 162 or EET 233	Introduction to Process Control Control Systems	3-4
EEM 200 or EET 131	Semiconductor Devices Active Devices	4
EEM 231	Digital Circuits I	3-4

or EET 145	Digital Circuits	
EEM 241 or EET 251	Microprocessor I Microprocessor Fundamentals	3-4
IMT 112 or IMT 210	Hand Tool Operations Basic Industrial Skills I	3
	Select one of the following:	4
IMT 161	Mechanical Power Applications <sup>1</sup>	
IMT 101 & MET 235	Introduction to Industrial Maintenance and Manufacturing Engineering Principles <sup>1</sup>	
	<b>Subtotal</b>	<b>34-37</b>
	<b>Total Hours</b>	<b>66-69</b>

<sup>1</sup> IMT 101 Introduction to Industrial Maintenance and MET 235 Manufacturing Engineering Principles must be taken together if the student chooses to enroll in these courses instead of IMT 161 Mechanical Power Applications.

## Graduation Plan

### Fall Start

Course	Title	Hours
<b>First Year</b>		
<b>Fall Semester</b>		
EEM 117	AC/DC Circuits I	4
IMT 112	Hand Tool Operations	3
IMT 161	Mechanical Power Applications	4
IMT 170	Statistical Process Control	3
	<b>Hours</b>	<b>14</b>

### Spring Semester

EEM 118	AC/DC Circuits II	4
EEM 151	Motor Controls I	4
IMT 131	Hydraulics and Pneumatics	4
MAT 170 or MAT 110	Algebra, Geometry and Trigonometry I or College Algebra	3
	<b>Hours</b>	<b>15</b>

### Summer Semester

EEM 162	Introduction to Process Control	3
EEM 200	Semiconductor Devices	4
EEM 231	Digital Circuits I	3
MAT 171 or MAT 111	Algebra, Geometry and Trigonometry II or College Trigonometry	3
	<b>Hours</b>	<b>13</b>

### Second Year

#### Fall Semester

AMT 105	Robotics and Automated Control I	3
EEM 140	National Electrical Code	3
EEM 251	Programmable Controllers	3
	Elective Social/Behavioral Sciences ( <a href="https://catalog.ptc.edu/student-handbook/advising-registration/general-education-courses/">https://catalog.ptc.edu/student-handbook/advising-registration/general-education-courses/</a> )	3
	<b>Hours</b>	<b>12</b>



**Spring Semester**

AMT 205	Robotics and Automated Control II	3
EEM 241	Microprocessor I	3
ENG 165	Professional Communications	3
Elective Humanities/Fine Arts ( <a href="https://catalog.ptc.edu/student-handbook/advising-registration/general-education-courses/">https://catalog.ptc.edu/student-handbook/advising-registration/general-education-courses/</a> )		3
Hours		12
Total Hours		66

<sup>1</sup> IMT 101 Intro to Industrial Maintenance and MET 235 Manufacturing Engineering Principles must be taken together if the student chooses to enroll in these courses instead of IMT 161 Mechanical Power Applications.

## Application and Advising

If you are ready to start your education, there are a few simple steps involved in enrolling at Piedmont Technical College.

Get Started Today (<https://www.ptc.edu/admissions/new-students/>)

## Advising Information

The following information provides a guide for advisors who are helping students enroll in this program.

### Program Notes

The Mechatronics program starts every fall semester on the Greenwood campus, the Center for Advanced Manufacturing campus in Laurens, the Newberry Campus, the Abbeville Campus, and the Saluda Campus. Saluda Campus offers a limited number of courses. Students starting in other semesters will be accommodated based on the course offerings. Please note that it may delay graduation.

### Notes About Individual Classes

The English required for this program is ENG 165. Students will follow this progression, with their starting point being determined by their placement test scores: ENG 032/012 and/or RDG 032/012 (or RWR 032/012) > ENG 100 and/or RDG 100 (or RWR 100) > ENG 165.

Please advise students to take math as soon as possible. The math courses required for this program are MAT 170 and MAT 171. Students will follow this progression, with their starting point being determined by their placement test scores: MAT 032/012 > MAT 170 > MAT 171.

## Program Student Learning Outcomes

### Purpose Statement

Combining electronic, mechanical, robotics and information system technologies, this program provides the graduate with the skill set needed for today's automated manufacturing facilities. These skills will align with current needs of manufacturers as well as align with one or more industrial standards/certifications. Instruction covers hydraulics and pneumatics, robotics and automated controls, programmable controllers, process control and mechanical applications. The student will receive practical hands-on experience and computer simulation on automated assembly line processes.

### Program Student Learning Outcomes:

1. Demonstrate a logical sequence for isolating problems within a Mechatronics process.
2. Analyze a process control system operation and select the appropriate sensing equipment for that operation.
3. Operate and adjust robots and automated systems equipment.
4. Analyze the operating difficulties of an automated system and perform the corrective actions needed.
5. Demonstrate the correct procedures in the breakdown, inspection, and repair of hydraulic and pneumatic equipment.
6. Test, analyze, and troubleshoot an industrial machine or process using a programmable logic controller (PLC).
7. Demonstrate an understanding of the use of PLC software and interface applications.