

## AUTOMATION & ROBOTICS ENGINEERING TECHNICIAN

### Mechatronics Engineering Technology (A40350)

#### ENGINEERING AND TECHNOLOGY PATHWAYS

These curriculums are designed to prepare students through the study and application of principles from mathematics, natural sciences, and technology and applied processes based on these subjects.

Course work includes mathematics, natural sciences, engineering sciences and technology.

Graduates should qualify to obtain occupations such as technical service providers, materials and technologies testing services, process improvement technicians, engineering technicians, industrial and technology managers, or research technicians.

#### PROGRAM DESCRIPTION

A course of study that prepares the students to use basic engineering principles and technical skills in developing and testing automated, servomechanical, and other electromechanical systems. Includes instruction in prototype testing, manufacturing and operational testing, systems analysis and maintenance procedures. Graduates should be qualified for employment in industrial maintenance and manufacturing including assembly, testing, startup, troubleshooting, repair, process improvement, and control systems, and should qualify to sit for Packaging Machinery Manufacturers Institute (PMMI) mechatronics or similar industry examinations.

#### COURSE REQUIREMENTS

Richmond Community College provides day and evening course sequences for selected programs to enable students to better plan what courses to take to reach their educational goals. However, given the continued increase in the use of technology in instruction and increasing student demand for distance learning courses, the College may offer hybrid, online, web-based and information highway courses in place of traditional courses in any course sequence that is listed. Therefore, students should be aware of this possibility and prepare themselves to successfully function in a hybrid, online, web-based, or information highway course.

	Class	Lab	Work/ Clinical	Credit	
<b>A. General Education Courses</b>					
1. Required Courses					
ENG 111	Writing and Inquiry	3	0	0	3
ENG 112	Writing/Research in the Disciplines	3	0	0	3
	or				
COM 231	Public Speaking	3	0	0	3
MAT 171	Precalculus Algebra	3	2	0	4
	Humanities/Fine Arts Elective*	3	0	0	3
	Social/Behavioral Sciences Elective*	3	0	0	3
<b>B. Major Courses</b>					
1. Core Courses					
<i>To receive a degree, diploma or certificate from RCC, a student must have a grade of "C" or better in all core courses for the program of study.</i>					
ATR 112	Intro to Automation	2	3	0	3

CIS	110	Introduction to Computers	2	2	0	3
DFT	151	CAD I	2	3	0	3
ELC	112	DC/AC Electricity	3	6	0	5
	or					
ELC	131	Circuit Analysis I	3	3	0	4
ELC	117	Motors and Controls	2	6	0	4
ELC	213	Instrumentation	3	2	0	4
ELN	260	Prog Logic Controllers	3	3	0	4
HYD	110	Hydraulics/Pneumatics I	2	3	0	3
ISC	112	Industrial Safety	2	0	0	2
MEC	130	Mechanisms	2	2	0	3
PHY	131	Physics-Mechanics	3	2	0	4
	or					
PHY	151	College Physics I	3	2	0	4
<b>2. Other Major Courses</b>						
ATR	120	Intro to Autonomous Vehicles	2	2	0	3
ELN	229	Industrial Electronics	3	3	0	4
ISC	132	Manufacturing Quality Control	2	3	0	3
MAT	172	Precalculus Trigonometry	3	2	0	4
MEC	110	Introduction to CAD/CAM	1	2	0	2
MNT	240	Industrial Equip Troubleshooting	1	3	0	2
	or					
WBL	111	Work-Based Learning I	0	0	10	1
	and					
WBL	115	Work-Based Learning Seminar I	1	0	0	1
<b>C. Other Required Hours</b>						
ACA	122	College Transfer Success	0	2	0	1

**Total Credit Hours****72-73**

\*Approved Electives are listed on the page before the Course Descriptions.

**SEMESTER SCHEDULE  
MECHATRONICS ENGINEERING TECHNOLOGY**

			Work/			
			Class	Lab	Clinical	Credit
<b>First Year – Fall Semester</b>						
ACA	122	College Transfer Success	0	2	0	1
CIS	110	Introduction to Computers	2	2	0	3
ELC	112	DC/AC Electricity	3	6	0	5
	or					
ELC	131	Circuit Analysis I	3	3	0	4
ENG	111	Writing and Inquiry	3	0	0	3
MAT	171	Precalculus Algebra	3	2	0	4
			—	—	—	—
			11	9-12	0	15-16

**First Year – Spring Semester**

ELC	117	Motors and Controls	2	6	0	4
ELN	229	Industrial Electronics	3	3	0	4
HYD	110	Hydraulics/Pneumatics I	2	3	0	3
ISC	112	Industrial Safety	2	0	0	2
MAT	172	Precalculus Trigonometry	3	2	0	4
			—	—	—	—
			12	14	0	17

**First Year – Summer Semester**

ENG	112	Writing/Research in the Disciplines	3	0	0	3
or						
COM	231	Public Speaking	3	0	0	3
		Humanities/Fine Arts Elective*	3	0	0	3
		Social/Behavioral Sciences Elective*	3	0	0	3
			—	—	—	—
			9	0	0	9

**Second Year – Fall Semester**

DFT	151	CAD I	2	3	0	3
ELN	260	Prog Logic Controllers	3	3	0	4
ISC	132	Manufacturing Quality Control	2	3	0	3
MEC	130	Mechanisms	2	2	0	3
PHY	131	Physics-Mechanics	3	2	0	4
or						
PHY	151	College Physics I	3	2	0	4
			—	—	—	—
			12	12	0	17

**Second Year – Spring Semester**

ATR	112	Intro to Automation	2	3	0	3
ATR	120	Intro to Autonomous Vehicles	2	2	0	3
ELC	213	Instrumentation	3	2	0	4
MEC	110	Introduction to CAD/CAM	1	2	0	2
MNT	240	Industrial Equip Troubleshooting	1	3	0	2
or						
WBL	111	Work-Based Learning I	0	0	10	1
and						
WBL	115	Work-Based Learning Seminar I	1	0	0	1
			—	—	—	—
			9	9-12	0-10	14

**Total Credit Hours****72-73**

\*Approved Electives are listed on the page before the Course Descriptions.

**MECHATRONICS ENGINEERING TECHNOLOGY (CERTIFICATE) (C40350)  
COURSE REQUIREMENTS**

			<b>Work/</b>			
			<b>Class</b>	<b>Lab</b>	<b>Clinical</b>	<b>Credit</b>
ELC	117	Motors and Controls	2	6	0	4
ELC	131	Circuit Analysis I	3	3	0	4
ELC	213	Instrumentation	3	2	0	4
ELN	260	Programmable Logic Controllers	3	3	0	4
			—	—	—	—
			11	14	0	16
<b>Total Credit Hours</b>						<b>16</b>