

# Mechatronics

Holland code family: Doers

## About the Program

Today's manufacturing industry uses robots and other advanced fabrication and assembly equipment to produce a wide variety of products. All of these systems rely on digital controls including programmable logic controllers. Mechatronics technicians calibrate, troubleshoot, and repair both the equipment and the controllers. Mechatronic technicians in southern Oregon are needed by manufacturers in the food processing, wood products, and metal fabrication industries. Typical positions include industrial engineering technician and manufacturing maintenance technician. The program can also provide preparation for apprenticeship programs leading to a variety of licensed journey positions.

The Mechatronics degree program trains students to be proficient in troubleshooting mechanical, electrical, pneumatic, and hydraulic equipment and the digital systems that control them. It prepares students for positions in the highly technical manufacturing environment installing, troubleshooting, programming, and maintaining a variety of types of production equipment. Today's manufacturing environment uses an extensive array of programmable controls, including programmable logic controllers (PLCs), as well as other single function controls using firmware and analog applications. Students learn foundational skills in math, fabrication, and repair as well as hydraulics, electronics, troubleshooting and programming, preparing students for numerous positions in a wide variety of manufacturing facilities. Elective options allow students to focus on either a mechanical or electronics emphasis.

Most of the courses in the program are hands-on, open-lab courses supported by online instruction providing students exceptional flexibility when scheduling around family, employment, or other commitments.

## Entry Requirements

Students are required to complete the Placement Process to determine skill level and readiness in math, reading, and writing. As part of their training program, students must begin with the courses within their skill level as determined by the results of their placement assessment. In addition, students may also be required to enroll in classes that would increase their employability and success.

## Advanced Standing

Coursework from accredited colleges and universities will be accepted in accordance with college registration policies and with the Manufacturing/Engineering Technology Department chair's recommendation. In order to ensure that coursework is current, program courses over 10 years old must be reviewed and approved by the appropriate program coordinator before being accepted toward core requirements. Students must complete coursework in their major at a "C" or better level before proceeding to advanced coursework. Each College Now credit student must meet with the program coordinator to determine placement.

## Graduation Requirements

Students are required to complete all courses in this program with a grade of "C" or better to receive their degrees. Certain required courses are graded on a pass/no pass basis only. A grade of "P" for these courses indicates a student earned the equivalent of a "C" or better grade.

## What skills will you learn?

Visit <http://go.roguecc.edu/department/program-learning-outcomes>.

## What are the employment opportunities?

Visit <http://www.roguecc.edu/GainfulEmployment>.

## Prerequisites

Course No.	Course Title	Credits
CS	Approved 3-4 credit computer science class, CS120 or above or computer proficiency <sup>1,2</sup>	0-4
MEC102	Basic Hand Tools or demonstrated proficiency	0-3
MTH63	Applied Algebra I or higher level math <sup>1</sup>	4
WR115	Introduction to Expository Writing or BT113 Business English I or higher level composition <sup>1</sup>	<u>3-4</u>

**Total Prerequisite Credits 7-15**

## First Year Required Courses

Course No.	Course Title	Credits
<b>First Term</b>		
EET104	Fundamentals of Manufacturing Electronics	4
MEC103	Industrial Safety	1
MFG116	Metrology	2



MFG121	Manufacturing Processes I	4
WLD111	Technology of Industrial Welding I or WLD101 Welding Fundamentals I and WLD102 Welding Fundamentals II	<u>6</u>
		17

## Second Term

HE112	Emergency First Aid	1
MEC130	Hydraulics I	3
MEC135	Mechanical Drives I	4
MET105	Blueprint Reading – Mechanical	3
MFG122	Manufacturing Processes II	<u>4</u>
		15

## Third Term

BT101	Human Relations in Organizations or PSY101 Psychology of Human Relations	3
EET150	PLC Motor Control	3
MEC125	Pneumatics I	3
MFG210	AC/DC Electrical Systems for Manufacturing	3
MFG232	Electric Motor Control I	<u>3</u>
		15

**Total First Year Credits 47**

## Second Year Required Courses

Course No.	Course Title	Credits
<b>Fourth Term</b>		
EET151	Programming PLCs I	4
MEC124	Hoisting and Rigging	3
MEC231	Hydraulics II	4
MFG233	Electric Motor Control II	3
—	Approved program elective	<u>2-8</u> 16-22
<b>Fifth Term</b>		
GS104	Physical Science with lab or approved program elective	4
LIB127	Introduction to Academic Research	1
MEC236	Mechanical Drives II	4
WR121	English Composition I or BT114 Business English II or higher level composition	4
—	Approved program elective	<u>0-5</u> 13-18
<b>Sixth Term</b>		
MFG280	Cooperative Work Experience/Manufacturing	4
—	Approved program electives	<u>11-17</u> 15-21
<b>Total Second Year Credits</b>		<b>44-61</b>
<b>TOTAL PROGRAM CREDITS</b>		<b>91-108</b>

## Approved Program Electives

(13-30 credits required)

### Mechanical Focus (Hydraulics, PNL, Drives)

Course No.	Course Title	Credits
MEC226	Pneumatics II	3
MEC228	Pneumatic Fittings and Troubleshooting	4
MEC233	Hydraulic Troubleshooting	4
MEC238	Mechanical Drives III	4
MET101	Mechanical Drafting	3
MFG211	Manufacturing Power and Control Electronics	4
MFG215	Electronic Control Systems	3
WLD112	Technology of Industrial Welding II	6
WLD250A	Selected Topics in Welding: FCAW	2
WLD250B	Selected Topics in Welding: GTAW	2
WLD250C	Selected Topics in Welding: SMAW	2
WLD250D	Selected Topics in Welding: GMAW	2
WLD250P	Selected Topics in Welding: CNC Plasma Cutting	3

### Electronics Focus

Course No.	Course Title	Credits
EET125	Electronics Fundamentals I (DC)	6
EET129	Introduction to Embedded Systems	5
EET130	Digital Fundamentals I	6
EET131	Digital Fundamentals II	6

## Robotics Focus

Course No.	Course Title	Credits
MEC240	Robotics I	3
<sup>1</sup> Required for graduation.		
<sup>2</sup> Successful completion of CS120 or otherwise meeting the proficiency requirement within the last 10 years fulfills this requirement. Contact a computer science advisor to help determine placement.		
For more information contact the Manufacturing and Engineering Technology Department: Grants Pass or Medford. . . . . 541-245-7902 Toll free in Oregon . . . . . 800-411-6508, Ext. 7902 email . . . . . manufacturing@roguecc.edu Web address . . . . . www.roguecc.edu/manufacturing TTY . . . . . Oregon Telecom Relay Service, 711		

This advising guide is for advising purposes only. Please see current college catalog for additional information on specific college policies and graduation requirements.  
RCC is an open institution and does not discriminate. For RCC's non-discrimination policy and a full list of regulatory specific contact persons visit the following webpage: [www.roguecc.edu/nondiscrimination](http://www.roguecc.edu/nondiscrimination).

