

## MECHATRONICS

### Credentials

Mechatronics skills certificate	18 cr.
Mechatronics certificate	39 cr.
Mechatronics AAS degree	63-67 cr.

### Major Description

The Mechatronics program focuses on the integration of mechanical, electrical (electronics), fluid power (hydraulics or pneumatics) and computer technologies to control machine movements. The students' studies begin with courses in mechanics, sensors, basic electronics, pneumatics, control logic and robot programming and control.

The program is not directly aimed at specific products. With the multiplicity of equipment presently in use, and the rapid advance and change in technology, the department stresses the development of a broad background that will enable students to find employment and be able to further their skills in a diversified number of industries.

Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

All courses are not offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them. Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

### Mechatronics Skills Certificate

Schoolcraft program code # CRT.00326

The mechatronics skills certificate introduces learners to the basic skills needed for employment in today's complex manufacturing environments. These classes all apply to the mechatronics certificate and associate degree.

Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

Students who satisfactorily complete the program requirements qualify for a certificate of program completion. All program required courses must have been completed with a grade of 2.0 or better.

### SAMPLE SCHEDULE OF COURSES

#### First Year—Fall Semester

#### First Year—Winter Semester

ELECT 131	Basic Measurement & Reporting Skills	3	ELECT 137	DC Circuits & Mathematical Modeling	5
MATH 113	Intermediate Algebra for College Students	4	MFG 110	Geometric Dimensioning & Tolerance, with Inspection	3
MFG 102	Basic Machining Processes	3		<b>Total Credits</b>	<b>8</b>
	<b>Total Credits</b>	<b>10</b>			

### PROGRAM TOTAL 18 CREDITS

Not all courses are offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them.

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with an academic advisor or counselor. Number of credits may vary depending on the course selection.

### Mechatronics Certificate

Schoolcraft program code # 1YC.00225

The mechatronics certificate is designed to address basic competency in skills needed for employment in today's complex manufacturing environments. These classes all apply to the mechatronics associate degree.

The program is not directly aimed at specific products. With the multiplicity of equipment presently in use, and the rapid advance and change in technology, the department stresses the development of a broad background that will enable students to find employment and be able to further their skills in a diversified number of industries.

Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

Students who satisfactorily complete the program requirements qualify for a certificate of program completion.

### SAMPLE SCHEDULE OF COURSES

#### First Year—Fall Semester

#### First Year—Winter Semester

ELECT 131	Basic Measurement & Reporting Skills	3	<i>ELECT 137</i>	DC Circuits & Mathematical Modeling	5
ELECT 145	Fluid Power	4	ELECT 251	Programmable Logic & Industrial Controls	4
MATH 113	Intermediate Algebra for College Students	4	MFG 110	Geometric Dimensioning & Tolerance, with Inspection	3
MFG 102	Basic Machining Processes	3	OSH	<i>Select one</i>	2
	<b>Total Credits</b>	<b>14</b>	OSH 111	Occupational Safety & Health for General Industry	
			OSH 11	Occupational Safety & Health for Construction	
				<b>Total Credits</b>	<b>14</b>

## Mechatronics Certificate (continued)

### First Year—Spring Session

ELECT 138	AC Circuits & Mathematical Modeling	5
ELECT 139	Diodes & Transistors	3
ELECT 218	AC/DC Motors	3
	<b>Total Credits</b>	<b>11</b>

### PROGRAM TOTAL 39 CREDITS

Not all courses are offered each semester. Students should work with an academic advisor or counselor to develop a schedule that will work for them.

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with an academic advisor or counselor. Number of credits may vary depending on the course selection.

## Mechatronics AAS Degree

Schoolcraft program code # AAS.00226

The mechatronics program focuses on the integration of mechanical, electrical (electronics), fluid power (hydraulics or pneumatics) and computer technologies to control machine movements. The students' studies begin with courses in mechanics, sensors, basic electronics, pneumatics, control logic and robot programming and control.

The program is not directly aimed at specific products. With the multiplicity of equipment presently in use, and the rapid advance and change in technology, the department stresses the development of a broad background that will enable students to find employment and be able to further their skills in a diversified number of industries.

Protective shop clothing and eye protection supplies required for the program will be purchased by the student.

Students who satisfactorily complete all college and program requirements qualify for an associate in applied science degree.

### SAMPLE SCHEDULE OF COURSES

#### First Year—Fall Semester

#### First Year—Winter Semester

ELECT 131	Basic Measurement & Reporting Skills	3	ELECT 137	DC Circuits & Mathematical Modeling	5
English	<i>Select one</i>	3	ELECT 145	Fluid Power	4
ENG 100	Communication Skills		ELECT 251	Programmable Logic & Industrial Controls	4
ENG 101	English Composition 1		MFG 110	Geometric Dimensioning & Tolerance with Inspection	3
MATH 113	Intermediate Algebra for College Students	4		<b>Total Credits</b>	<b>16</b>
MFG 102	Basic Machining Processes	3			
OSH	<i>Select one</i>	2			
OSH 111	Occupational Safety & Health for General Industry				
OSH 112	Occupational Safety & Health for Construction				
	<b>Total Credits</b>	<b>15</b>			

#### First Year—Spring Session

ELECT 138	AC Circuits & Mathematical Modeling	5
English	<i>Select one</i>	3
ENG 102	English Composition 2	
ENG 116	Technical Writing	
	<b>Total Credits</b>	<b>8</b>

#### Second Year—Fall Semester

#### Second Year Year—Winter Semester

ELECT 139	Diodes & Transistors	3	ELECT 144	Introduction to Microcontrollers	3
ELECT 218	AC/DC Motors	3	Elective	<i>Select from list</i>	3
ENGR 100	Introduction to Engineering & Technology	3	Humanities	<i>Select General Education Humanities course</i>	1-4
Social Science	<i>Select General Education Social Science course</i>	3-4	COMA 103	Fundamentals of Speech (recommended)	
	<b>Total Credits</b>	<b>12-13</b>	PHYS 123	Applied Physics	5
				<b>Total Credits</b>	<b>12-15</b>

### PROGRAM TOTAL 63-67 CREDITS

#### Electives (Optional)

CAD 103	Engineering Graphics	3
CIS 129	Introduction to Programming Logic	3
MET 103	Introduction to Materials Science	3
MFG 103	Basic Computer Numerical Control (CNC)	3
QM 107	Quality Planning & Team Building	3
WELD 113	Shielded Metal Arc Welding (S.M.A.W.)	3

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