

## MANUFACTURING

### Credentials

Advanced Manufacturing skills certificate	18 cr.
Advanced Manufacturing Certificate	31 cr.
Advanced Manufacturing AAS Degree	60-67 cr.

### Major Description

Today's manufacturing professionals need to understand the fundamentals of production and technology while using critical thinking skills to solve problems and focus on quality and efficiency. Schoolcraft's manufacturing program exposes students to manufacturing processes, materials, methods of production and quality systems and tools in three areas of study:

- The advanced manufacturing skills certificate introduces students to the skills and techniques in manufacturing needed for employment in today's highly technical manufacturing environments.
- With the advanced manufacturing certificate, students new to manufacturing and those with experience will learn the most current manufacturing technology and techniques.
- The associate of applied science in advanced manufacturing gives students the know-how to program CNC machines, or work as a production manager or quality technician.

### Advanced Manufacturing Skills Certificate

Schoolcraft program code # CRT.00337

The advanced manufacturing skills certificate introduces learners to advanced skills and techniques in manufacturing. It provides the basic skills needed for employment in today's highly technical manufacturing environments. These classes all apply to the advanced manufacturing 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

MFG 102	Basic Machining Processes	3
ENGR 100	Introduction to Engineering & Technology	3
QM 107	Quality Planning & Team Building	3
	<b>Total Credits</b>	<b>9</b>

##### First Year—Winter Semester

MFG 103	Basic Computer Numerical Control (CNC)	3
MFG 106	Basic Mastercam	3
MFG 110	Geometric Dimensioning & Tolerance, with Inspection	3
	<b>Total Credits</b>	<b>9</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.

### Advanced Manufacturing Certificate

Schoolcraft program code # 1YC.00237

The advanced manufacturing certificate addresses basic competency in skills needed for employment in today's highly technical manufacturing environments. The certificate is designed to train those new to manufacturing, but also serves to update the skills of seasoned manufacturing workers with the most current technology and techniques. These classes all apply to the advanced manufacturing 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.

#### SAMPLE SCHEDULE OF COURSES

##### First Year—Fall Semester

MFG 102	Basic Machining Processes	3
MFG 105	Manufacturing Processes	4
CAD 103	Engineering Graphics	3
ENGR 100	Introduction to Engineering & Technology	3
	<b>Total Credits</b>	<b>13</b>

##### First Year—Winter Semester

MFG 103	Basic Computer Numerical Control (CNC)	3
MFG 106	Basic Mastercam	3
MFG 110	Geometric Dimensioning & Tolerance, with Inspection	3
QM 107	Quality Planning & Team Building	3
	<b>Total Credits</b>	<b>12</b>

##### First Year—Spring Session

MFG 203	Advanced Computer Numerical Control (CNC)	3
MFG 206	Advanced Mastercam	3
	<b>Total Credits</b>	<b>6</b>

#### PROGRAM TOTAL 67 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.

## Advanced Manufacturing AAS Degree

Schoolcraft program code # AAS.00135

The advanced manufacturing program is designed to provide learners with growth and development in a variety of manufacturing processes, to expose them to materials and methods of production and make them aware of quality systems and tools. While this program offers an entry level certification for individuals pursuing a career in manufacturing, it has been designed to enable individuals the opportunity to continually expand and upgrade their applied skills as well as to maintain a thorough mastery of evolving manufacturing technologies. 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

MFG 102	Basic Machining Processes	3
MFG 105	Manufacturing Processes	4
ENGR 100	Introduction to Engineering & Technology	3
CAD 103	Engineering Graphics	3
ENG100*	Communication Skills	3
<b>Total Credits</b>		<b>16</b>

#### First Year—Winter Semester

MFG 103	Basic Computer Numerical Control (CNC)	3
MFG 106	Basic Mastercam	3
MFG 110	Geometric Dimensioning & Tolerance, with Inspection	3
QM 107	Quality Planning and Team Building	3
<b>Total Credits</b>		<b>12</b>

#### First Year—Spring Session

Elective	<i>Select from list</i>	3
Science	<i>Select General Education Science course</i>	3-5
<b>Total Credits</b>		<b>6-8</b>

#### Second Year—Fall Semester

MFG 203	Advanced Computer Numerical Control (CNC)	3
MFG 206	Advanced Mastercam	3
MET 103	Introduction to Materials Science	3
ENG 106*	Business English	3
Social Science	<i>Select General Education Social Science Course</i>	3-4
<b>Total Credits</b>		<b>15-16</b>

#### Second Year—Winter Semester

MFG 211	3D Computer Numerical Control(CNC) Machining	3
Elective	<i>Select from list</i>	2-3
Mathematics	<i>Select General Education Mathematics course</i>	3-5
Humanities	<i>Select General Education Humanities course</i>	3-4
	<i>COMA 103 Fundamentals of Speech (recommended)</i>	
<b>Total Credits</b>		<b>11-15</b>

### PROGRAM TOTAL 60-67 CREDITS

\* Other courses meeting the college requirements may be substituted.

#### Electives

MFG 290	Manufacturing Internship	3
MET 116	Introduction to Physical Metallurgy	3
OSH 111	Occupational Safety & Health for General Industry	2
WELD 110	Introduction to Welding—Fabrication Basics	3
WELD 115	Gas Metal Arc Welding (G.M.A.W./M.I.G.)	3
WELD 119	Gas Tungsten Inert Arc Welding (G.T.A.W./T. I.G.)	3
PLAST 130	Introduction to Plastic Materials	3
PLAST 131	Introduction to Plastic Processing	3

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