Manufacturing

Credentials

Advanced Manufacturing Skills Certificate	18 cr.
Advanced Manufacturing Certificate	31-33 cr.
Advanced Manufacturing AAS Degree	60-66 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 offering three levels of credentials:

• The Advanced Manufacturing Skills Certificate introduces students to the fundamental skills and techniques in manufacturing needed for employment in today's highly technical manufacturing environments.

• With the Advanced Manufacturing Certificate, students can enhance their skills as they are exposed to the most current manufacturing technology and techniques through experiential learning experiences.

• The Associate of Applied Science Degree in Advanced Manufacturing gives students higher-level knowledge and skills, such as how to program CNC machines, or work as a production manager or quality technician. This program also provides exposure to tool and die making.

Advanced Manufacturing Skills Certificate

Schoolcraft program code # CRT.00337

The Advanced Manufacturing Skills Certificate introduces learners to foundational 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 Certificate and Associate in Applied Science Degree. Protective shop clothing and eye protection supplies are required for the program, and 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.

Not all courses are offered each semester. Students should work with an academic advisor 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. Number of credits may vary depending on the course selection.

SAMPLE SCHEDULE OF COURSES

First Year - Fall Semester

Course #	Course Title	Credits
MFG 102	**Basic Machining Processes**	3
ENGR 100	**Introduction to Engineering and Technology**	3
CAD 120	**Mechanical Blueprint Reading with Sketching**	3
	Total Credits: 9	

First Year - Winter Semester

Course #	Course Title	Credits
MFG 103	**Basic Computer Numerical Control (CNC)**	3
MFG 106	**Basic Mastercam**	3
QM 107	**Quality Planning and Team Building**	3
	Total Credits: 9	

PROGRAM TOTAL 18 CREDITS

Advanced Manufacturing Certificate

Schoolcraft program code # 1YC.00237

The Advanced Manufacturing Certificate provides enhanced 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 or expand the skills of seasoned manufacturing workers with the most current technology and techniques. These classes all apply to the Advanced Manufacturing Associate in Applied Science Degree. Protective shop clothing and eye protection supplies are required for the program, and will be purchased by the student.

Students who satisfactorily complete the program requirements qualify for a certificate of program completion. Not all courses are offered each semester. Students should work with an academic advisor 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. Number of credits may vary depending on the course selection.

SAMPLE SCHEDULE OF COURSES

First Year - Fall Semester

Course #	Course Title	Credits
MFG 102	**Basic Machining Processes**	3
MFG 105	**Manufacturing Processes**	4
CAD 120	**Mechanical Blueprint Reading with Sketching**	3
ENGR 100	**Introduction to Engineering and Technology**	3
	Total Credits: 13	

First Year - Winter Semester

Course #	Course Title	Credits
MFG 103	**Basic Computer Numerical Control (CNC)**	3
MFG 106	**Basic Mastercam**	3
Mathematics	**Select General Education Mathematics course**	3-5
QM 107	**Quality Planning and Team Building**	3
	Total Credits: 12-14	

First Year - Spring Session

Course #	Course Title	Credits
Manufacturing	**Select one:**	3
MFG 203	**Advanced Computer Numerical Control (CNC)**	
MFG 206	**Advanced Mastercam**	
CAD 130	**Geometric Dimensioning and Tolerance**	3
	Total Credits: 6	

PROGRAM TOTAL 31-33 CREDITS

Advanced Manufacturing AAS Degree

Schoolcraft program code # AAS.00135

The Associate in Applied Science Degree in Advanced Manufacturing is designed to provide learners with growth and development in a variety of manufacturing processes, to expose them to materials and methods of production, make them aware of quality systems and tools and introduce them to tool and die making. This degree is 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 are required for the program, and will be purchased by the student.

Students who satisfactorily complete all college and program requirements qualify for an Associate in Applied Science Degree.

Not all courses are offered each semester. Students should work with an academic advisor 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. Number of credits may vary depending on the course selection.

SAMPLE SCHEDULE OF COURSES

First Year - Fall Semester

Course #	Course Title	Credits
MFG 102	**Basic Machining Processes**	3
MFG 105	**Manufacturing Processes**	4
ENGR 100	**Introduction to Engineering and Technology**	3
CAD 120	**Mechanical Blueprint Reading with Sketching**	3
Mathematics	**Select General Education Mathematics course**	3-5
	Total Credits: 16-18	

First Year - Winter Semester

Course #	Course Title	Credits
MFG 103	**Basic Computer Numerical Control (CNC)**	3
MFG 106	**Basic Mastercam**	3
CAD 130	**Geometric Dimensioning and Tolerance**	3
QM 107	**Quality Planning and Team Building**	3
	Total Credits: 12	

First Year - Spring Session

Course #	Course Title	Credits
Elective	**Select from list**	3
Science	**Select General Education Science course**	3-5
	Total Credits: 6-8	

Advanced Manufacturing AAS Degree (continued)

Second Year - Fall Semester

Course #	Course Title	Credits
MFG 203	**Advanced Computer Numerical Control (CNC)**	3
MFG 206	**Advanced Mastercam**	3
MET 103	**Introduction to Materials Science**	3
English	**Select first within a set of General Education English Communication courses**	3
Recommended:	**ENG 100 Communication Skills**	
Social Science	**Select General Education Social Science Course**	3
Recommended:	**PSYCH 153 Human Relations**	
	Total Credits: 15	

Second Year - Winter Semester

Course #	Course Title	Credits
MFG 211	**3D Computer Numerical Control (CNC) Machining**	3
Elective	**Select any from list not previously taken**	4
English	**Select second within a set of General Education English Communication courses**	3
Recommended:	**ENG 106 Business English OR**	
	ENG 116 Technical Writing	
Humanities	**Select General Education Humanities course**	1-3
Recommended:	**COMA 103 Fundamentals of Speech**	
	Total Credits: 11-13	

Advanced Manufacturing AAS Degree (continued)

Electives

Course #	Course Title	Credits
MFG 202	**Advanced Machining Processes**	3
MFG 212	**Coordinate Measuring Machine**	2
MFG 213	**Machining Speeds and Feeds**	2
MFG 291	**Manufacturing Internship**	3
OSH 111	**Occupational Safety and Health for General Industry**	2
WELD 110	**Introduction to Welding Basics for Fabrication**	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
ROBAT 101	**Robot Tool Handling Operations and Programming**	3

PROGRAM TOTAL 60-66 CREDITS

* Other courses meeting the college requirements may be substituted.