

MANUFACTURING TECHNOLOGY
AAS DEGREE

The Manufacturing Technology program provides training in a wide variety of skill areas of product manufacturing and services. The four degree options in the program are Automated Manufacturing Systems, Drafting/Design, Manufacturing Technology and Manufacturing Engineering Technology. Automated Manufacturing is designed to prepare the student for careers in computer-aided manufacturing, robotics and numerical control. Drafting/Design prepares the student for careers in the drafting and computer-aided design areas. Manufacturing Technology provides the student with a broad background in the areas of machining, drafting and fluid systems so as to prepare them for entry-level positions as machine operators, machine maintenance personnel and quality control personnel. The Manufacturing Engineering Technology degree prepares students for entry-level engineering technician positions in manufacturing. The **Manufacturing Technology degree** requires 65 credits in program requirements, program electives and general education in the courses listed below.

Field of Study Code: MANUF.AAS

Program Requirements	29
Manuf 1101 Industrial Design/CAD	3
Manuf 1104 Technical Mechanics	2
Manuf 1110 Metrology	3
Manuf 1151 Machine Shop I	3
Manuf 1153 Advanced Machine Processes	3
Manuf 1180 Quality Control	3
Manuf 2251 Computer Numerical Control (CNC)	3
Elect 1100 Electricity and Electronics Fundamentals	3
Elmec 1141 Hydraulics and Pneumatics	3
Weld 1100 Welding I	3
Program Electives	16
Select 16 credits from the courses listed below. (In addition to the courses listed above.)	
Manuf 1121 Physical Metallurgy	3
Manuf 2201 Geometric Dimensioning and Tolerancing	3
Manuf 2202 Solid Modeling and Design	3
Elmec 1171 Introduction to Robotic Technology	3
Weld 1112 Oxy-Fuel, Welding, Plasma Cutting and Brazing	3
Weld 1122 Shielded Metal Arc (SMAW)	3
Weld 1132 Gas Metal Arc (MIG)	3
Weld 1142 Gas Tungsten Arc (TIG)	3
General Education	20
(In addition to the courses listed above.)	
Total Credits Required	65

AAS DEGREE

The **Automated Manufacturing Systems degree** requires 66 credits in program requirements, program electives and general education in the courses listed below.

Field of Study Code: MANUF.AAS.AUTO

Program Requirements	40
Manuf 1101 Industrial Design/CAD	3
Manuf 1104 Technical Mechanics	2
Manuf 1110 Metrology	3
Manuf 1121 Physical Metallurgy	3
Manuf 1151 Machine Shop I	3
Manuf 1180 Quality Control	3
Manuf 2202 Solid Modeling and Design	3
Manuf 2251 Computer Numerical Control (CNC)	3
Manuf 2253 Computer-Aided Manufacturing (CAM)	3
Manuf 2280 Industrial Safety	2
Elect 1100 Electricity and Electronics Fundamentals	3
Elmec 1141 Hydraulics and Pneumatics	3
Elmec 1171 Introduction to Robotic Technology	3
Elmec 1190 Introduction to Programmable Logic Controllers	3
Program Electives	6
Select six credits from the courses listed below. (In addition to the courses listed above.)	
Manuf 1153 Advanced Machine Processes	3
Manuf 1160 Technical Static and Strength of Material	4
Manuf 2201 Geometric Dimensioning and Tolerancing	3
Manuf 2203 Manufacturing Processes and Design	3
Manuf 2206 Mechanical Computer-Aided Drafting/Design	3
Manuf 2207 Tool Design	3
Manuf 2271 Robotic Application	3
General Education	20
(In addition to the courses listed above.)	
Total Credits Required	66

AAS DEGREE

The **Manufacturing Technology Drafting/Design degree** requires 65 credits in program requirements, program electives and general education in the courses listed below.

Field of Study Code: MANUF.AAS.DRAFT

Program Requirements	32
Manuf 1101 Industrial Design/CAD	3
Manuf 1104 Technical Mechanics	2
Manuf 1121 Physical Metallurgy	3
Manuf 1151 Machine Shop I.....	3
Manuf 1180 Quality Control	3
Manuf 2202 Solid Modeling and Design.....	3
Manuf 2203 Manufacturing Processes and Design	3
Manuf 2206 Mechanical Computer-Aided Drafting/Design	3
Manuf 2207 Tool Design.....	3
Manuf 2208 Mechanical Design Portfolio	3
Elect 1100 Electricity and Electronics Fundamentals.....	3

Program Electives **13**

Select 13 credits from the courses listed below. (In addition to the courses listed above.)

Manuf 1110 Metrology.....	3
Manuf 2201 Geometric Dimensioning and Tolerancing	3
Manuf 2251 Computer Numerical Control (CNC)	3
Manuf 2280 Industrial Safety	2
Manuf 2281 Cost Analysis.....	2
Elmec 1141 Hydraulics and Pneumatics	3
Elmec 1171 Introduction to Robotic Technology	3
Elmec 1190 Introduction to Programmable Logic Controllers.....	3
Weld 1100 Welding I	3

General Education **20**

(In addition to the courses listed above.)

Total Credits Required..... **65**

AAS DEGREE

The **Manufacturing Engineering Technology degree** requires 65 credits in program requirements and general education in the courses listed below.

Field of Study Code: MANUF.AAS.MET

Program Requirements	53
Manuf 1101 Industrial Design/CAD	3
Manuf 1121 Physical Metallurgy	3
Manuf 1151 Machine Shop I.....	3
Manuf 1160 Technical Static and Strength of Material	4

Manuf 1180	Quality Control	3
Manuf 2202	Solid Modeling and Design.....	3
Manuf 2203	Manufacturing Processes and Design	3
Manuf 2251	Computer Numerical Control (CNC).....	3
Manuf 2253	Computer-Aided Manufacturing (CAM).....	3
Manuf 2281	Cost Analysis	3
Elect 1100	Electricity and Electronics Fundamentals	3
Elmec 1141	Hydraulics and Pneumatics	3
Math 1431	Precalculus I	5
Math 1432	Precalculus II: Trigonometry	3
Math 1635	Statistics	4
Physi 1201	General Physics I	5

General Education **12**

(In addition to the courses listed above.)

Total Credits Required..... **65**

CERTIFICATE

The **Manufacturing Technology certificate** requires 35 credits in program the courses listed below.

Field of Study Code: MANUF.CER

Total Credits Required **35**
Program Requirements **29**

Manuf 1101	Industrial Design/CAD.....	3
Manuf 1104	Technical Mechanics	2
Manuf 1110	Metrology	3
Manuf 1121	Physical Metallurgy	3
Manuf 1151	Machine Shop I	3
Manuf 1153	Advanced Machine Processes.....	3
Manuf 1180	Quality Control.....	3
Math 1115	Technical Mathematics I	3

OR

Weld 1100	Welding I	3
Elect 1100	Electricity and Electronics Fundamentals	3
Elmec 1141	Hydraulics and Pneumatics	3

Program Electives..... **6**

Select six credits from the courses below. (In addition to the courses listed above.)

Manuf 2201	Geometric Dimensioning and Tolerancing.....	3
Manuf 2251	Computer Numerical Control (CNC).....	3
Manuf 2253	Computer-Aided Manufacturing (CAM).....	3
Elmec 1171	Introduction to Robotic Technology	3
Weld 1122	Shielded Metal Arc (SMAW)	3
Weld 1132	Gas Metal Arc (MIG)	3
Weld 1142	Gas Tungsten Arc (TIG).....	3

CERTIFICATE

The **Automated Manufacturing Systems certificate** requires 35 credits in the courses listed below.

Field of Study Code: MANUF.CER.AUTO

Total Credits Required	35
Manuf 1101 Industrial Design/CAD	3
Manuf 1104 Technical Mechanics	2
Manuf 1151 Machine Shop I	3
Manuf 1180 Quality Control	3
Manuf 2200 Production Technology	4
Manuf 2251 Computer Numerical Control (CNC)	3
Manuf 2253 Computer-aided Manufacturing (CAM)	3
Manuf 2280 Industrial Safety	2
Elmec 1141 Hydraulics and Pneumatics	3
Elmec 1171 Introduction to Robotic Technology	3
Elmec 1190 Introduction to Programmable Logic Controllers.....	3
Math 1115 Technical Mathematics I	3

CERTIFICATE

The **Computer-Aided Design certificate** requires 24 credits in the courses listed below.

Field of Study Code: MANUF.CER.CAD

Total Credits Required	24
Program Requirements	18
Manuf 1101 Industrial Design/CAD	3
Manuf 2202 Solid Modeling and Design	3
Manuf 2203 Manufacturing Processes and Design	3
Manuf 2206 Mechanical Computer-Aided Drafting/Design	3
Manuf 2207 Tool Design	3
Manuf 2208 Mechanical Design Portfolio	3
Program Electives	6
Select six credits from the courses listed below. (In addition to the courses listed above.)	
Manuf 1110 Metrology.....	3
Manuf 1121 Physical Metallurgy	3
Manuf 2201 Geometric Dimensioning and Tolerancing	3
Manuf 2280 Industrial Safety	2
Manuf 2281 Cost Analysis.....	2
Elect 1100 Electricity and Electronics Fundamentals.....	3
Elmec 1141 Hydraulics and Pneumatics	3

CERTIFICATE

The **Drafting/Design certificate** requires 38 credits in the courses listed below.

Field of Study Code: MANUF.CER.DRAFT

Total Credits Required	38
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Manuf 1101 Industrial Design/CAD	3
Manuf 1104 Technical Mechanics	2
Manuf 1151 Machine Shop I	3
Manuf 1180 Quality Control.....	3
Manuf 2201 Geometric Dimensioning and Tolerancing.....	3
Manuf 2202 Solid Modeling and Design	3
Manuf 2203 Manufacturing Processes and Design	3
Manuf 2206 Mechanical Computer-Aided Drafting/Design.....	3
Manuf 2207 Tool Design	3
Manuf 2208 Mechanical Design Portfolio	3
Elect 1100 Electricity and Electronics Fundamentals	3
Elmec 1141 Hydraulics and Pneumatics	3
Math 1115 Technical Mathematics I	3

CERTIFICATE

The **Mold Making certificate** requires 31 credits in the courses listed below.

Field of Study Code: MANUF.CER.MOLD

Total Credits Required	31
Manuf 1127 Engineering Materials of Industry.....	3
Manuf 2200 Production Technology	4
Manuf 2265 Mold Making I	4
Manuf 2267 Mold Making II	4
Manuf 2276 Advanced Mold Making and Engineering I	4
Manuf 2277 Advanced Mold Making and Engineering II	4
Math 1115 Technical Mathematics I	3
Math 1116 Technical Mathematics II	5

CERTIFICATE

The **Manufacturing Skills Standards certificate (MSSC)** provides the technical knowledge required for achievement of the Manufacturing Skills Standards Council (MSSC) certification and requires seven credits in the courses listed below.

Field of Study Code: MANUF.CER.MSSC

Total Credits Required	7
Manuf 1104 Technical Mechanics	2
Manuf 1180 Quality Control.....	3
Manuf 2280 Industrial Safety	2

CERTIFICATE

The **Tool and Die Making certificate** requires 31 credits in the courses listed below.

Field of Study Code: MANUF.CER.TOOL

Total Credits Required	31
Manuf 1127	Engineering Materials of Industry 3
Manuf 2200	Production Technology 4
Manuf 2261	Basic Die Making I 4
Manuf 2262	Basic Die Making II 4
Manuf 2272	Advanced Die Making and Engineering I 4
Manuf 2274	Advanced Die Making and Engineering II 4
Math 1115	Technical Mathematics I 3
Math 1116	Technical Mathematics II 5

CERTIFICATE

Students will learn operations of Computer Numerical Control (CNC) controlled machining and turning centers. The **CNC Operations Certificate** requires 17 credits from the courses listed below.

Field of Study Code: MANUF.CER.CNC

Total Credits Required	17
Manuf 1101	Industrial Design/CAD 3
Manuf 1151	Machine Shop I..... 3
Manuf 2251	Computer Numerical Control (CNC) 3
Manuf 2252	CNC Operations 3
Manuf 2253	Computer-Aided Manufacturing (CAM) 3
Manuf 2280	Industrial Safety 2