

Manufacturing Technology

Certificates

The **Manufacturing Technology certificate** requires 35 credits in 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

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

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

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

Select six credits from the courses below.

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

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

Field of Study Code: MANUF. CER.DRAFT

Total Credits Required	38
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

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Certificates

The **Mold Making certificate** requires 31 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

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

The **Tool and Die Making certificate** requires 31 credits from 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

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

Contact Information:

If you are considering this program as an area of study, please contact the **Business & Technology Division** office at 630-942-2592.

Program web site:

<http://www.cod.edu/programs/manufacturing/>