Computer Aided Design

Credentials

Computer Aided Design: Mechanical Design Skills Certificate	17 cr.
Computer Aided Design: Mechanical Design Certificate	31 cr.
Computer Aided Design: Mechanical Design AAS Degree	64 – 68 cr.

Major Description

Schoolcraft College in Livonia offers an Associate's Degree in Mechanical Design. Our program is designed to prepare students for immediate employment utilizing multiple CAD (Computer Aided Design) software packages. A person can choose to enhance their knowledge in CAD and Manufacturing with the Skills Certificate or the Certificate. In the Degree program, 2D Drawing and 3D Modeling software is utilized and design practice is demonstrated for gears, cams, fasteners, jigs and fixtures. Dimension & Tolerance is according to the ASME Y14.5 Standard.

Computer Aided Design: Mechanical Design Skills Certificate

Schoolcraft program code # CRT.00238

Computer-Aided Design (CAD) is the process of creating 3D Virtual Models of components & assemblies, and 2D drawings that fully describe the product. The CAD operator, while using a wide variety of CAD software packages, refines the product and creates drawings following standardized practices through International and company related Standards. This certificate provides learning opportunities in CAD software, drawing creation following ASME standards and Dimension & Tolerance per the ASME Y14.5 standard. Graduates can find entry level employment in design and engineering related activities in the areas of transportation, aerospace, medical technology, power transmission & defense.

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
CAD 120	**Mechanical Blueprint Reading with Sketching**	3
MFG 102	**Basic Machining Processes**	3
MATH 102	**Technical Mathematics**	4
	Total Credits: 10	

First Year – Winter Semester

Course #	Course Title	Credits
CAD 130	**Geometric Dimensioning and Tolerance**	3
Elective	**Select one:**	4
CAD 140	**AutoCAD – 2D Application**	
CAD 210	**CATIA – 3D & 2D Applications**	
CAD 220	**SolidWorks – 3D & 2D Applications**	
CAD 230	**NX – 3D & 2D Applications**	
	Total Credits: 7	

PROGRAM TOTAL 17 CREDITS

Computer Aided Design: Mechanical Design Certificate

Schoolcraft program code # 1YC.00248

Computer-Aided Design (CAD) is the process of creating 3D Virtual Models of components and assemblies, and 2D drawings that fully describe the product. The Mechanical Designer, while using a wide variety of CAD software, develops/refines the product and creates drawings following standardized practices through International and company related standards. This program provides learning opportunities in multiple CAD software packages, drawing creation following ASME standards and Dimension & Tolerance per the ASME Y14.5 standard. Graduates can find entry level employment in design and engineering related activities, in the areas of transportation, aerospace, medical technology, power transmission, and defense.

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
CAD 120	**Mechanical Blueprint Reading with Sketching**	3
MET 103	**Introduction to Materials Science**	3
MFG 102	**Basic Machining Processes**	3
MATH 102	**Technical Mathematics**	4
QM 107	**Quality Planning and Team Building**	3
	Total Credits: 16	

First Year - Winter Semester

Course #	Course Title	Credits
CAD 140	**AutoCAD – 2D Application**	4
CAD 130	**Geometric Dimensioning and Tolerance**	3
MFG 105	**Manufacturing Processes**	4
Elective	**Select one:**	4
CAD 210	**CATIA – 3D & 2D Applications**	
CAD 220	**SolidWorks – 3D & 2D Applications**	
CAD 230	**NX – 3D & 2D Applications**	
	Total Credits: 15	

PROGRAM TOTAL 31 CREDITS

Computer Aided Design: Mechanical Design AAS Degree

Schoolcraft program code # AAS.00258

Computer-Aided Design (CAD) is the process of creating 3D Virtual Models of components and assemblies, and 2D drawings that fully describe the product. The Mechanical Designer, while using a wide variety of CAD software, develops the product and creates drawings following standardized practices through International and company related standards. This program provides learning opportunities in multiple CAD software packages, drawing creation following ASME standards, tool and machine design, dimension & tolerance per the ASME Y14.5 standard and introduction to part creation through Manufacturing. Graduates can find employment in design and engineering related activities, in the areas of transportation, aerospace, medical technology, power transmission and defense.

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
CAD 120	**Mechanical Blueprint Reading with Sketching**	3
ENGR 100	**Introduction to Engineering and Technology**	3
MET 103	**Introduction to Materials Science**	3
MATH 102	**Technical Mathematics**	4
Humanities	**Select General Education Humanities course**	1-4
Recommended:	**COMA 103 Fundamentals of Speech**	
	Total Credits: 14-17	

First Year - Winter Semester

Course #	Course Title	Credits
CAD 140	**AutoCAD – 2D Application**	4
MFG 102	**Basic Machining Processes**	3
Elective	**Select two:**	8
CAD 210	**CATIA – 3D & 2D Applications**	
CAD 220	**SolidWorks – 3D & 2D Applications**	
CAD 230	**NX – 3D & 2D Applications**	
	Total Credits: 15	

Computer Aided Design: Mechanical Design AAS Degree (continued)

First Year - Spring/Summer Session

Course #	Course Title	Credits
CAD 130	**Geometric Dimensioning and Tolerance**	3
English	**Select first within a set of General Education English Communication courses**	3
Recommended:	**ENG 100 Communication Skills**	
Recommended:	**ENG 101 English Composition 1**	
	Total Credits: 6	

Second Year – Fall Semester

Course #	Course Title	Credits
CAD 270	**Machine Elements and Design**	4
English	**Select second within a set of General Education English Communication courses**	3
Recommended:	**ENG 116 Technical Writing**	
MFG 105	**Manufacturing Processes**	4
QM 107	**Quality Management**	3
	Total Credits: 14	

Second Year - Winter Semester

Course #	Course Title	Credits
CAD 275	**Tool, Die and Fixture Design**	4
Elective	**Select one:**	3
CAD 280	**CAD Capstone Project**	
CAD 291	**Computer-Aided Design Internship**	
PHYS 123	**Applied Physics**	5
Social Science	**Select General Education Social Science course**	3-4
Recommended:	**PSYCH 153 Human Relations**	
	Total Credits: 15-16	

PROGRAM TOTAL 64-68 CREDITS