Computer Aided Drafting
Program Guide

Technical Certificate Requirements

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<th>Fall Semester</th>
<th>Spring Semester</th>
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<tr>
<td>Course Title</td>
<td>Credits</td>
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<tr>
<td>CAD 102 SolidWorks Part Modeling</td>
<td>3</td>
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<tr>
<td>CAD 107 SolidWorks Assembly Modeling</td>
<td>3</td>
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<tr>
<td>CAD 112 Introduction to Mechanical Drafting</td>
<td>3</td>
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<tr>
<td>CAD 117 Intermediate Mechanical Drafting</td>
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<td>CAD 127 Basics of AutoCAD</td>
<td>3</td>
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<tr>
<td>MAT 101 Technical Math</td>
<td>3</td>
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<td>Semester Total</td>
<td>18</td>
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<td>Total Technical Education Credits</td>
<td>36</td>
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Associate of Applied Science Degree Requirements

Required Technical Credits

- Computer Aided Drafting Technical Certificate | 36

Related Technical Electives

- Any Commercial Art, Construction, Electrical, Machine Tool Technology | 9

General Education (course numbers 100 or above)

- Verbal Communications | 3
- Written Communications | 3
- Mathematics, and/or Computer Science | 6
- Social Sciences and/or Humanities and Fine Arts | 3

Technical Certificate | 36
Related Technical Electives | 9
General Education | 15
Total AAS Credits | 60

Admission Criteria

- Successfully complete applicable preadmission testing and/or advising

Computer Aided Drafting (CAD) technicians work alongside engineers and designers to provide real-world solutions to everyday problems in the fields of mechanical, structural and civil engineering as well as architecture. CAD technicians, working in the mechanical field, can expect to work for a manufacturing company creating detail and assembly drawings of parts for any number of industries including agriculture, plastics, food and pharmaceutical. CAD Technicians in the fields of structural engineering and architecture provide construction documents to build houses, hospitals, stadiums and schools. The Civil Engineering Technician will prepare drawings of site plans, road layout and bridge projects. All of these fields currently utilize 3D modeling software to create drawings that provide real-world solutions.

Career Opportunities: Ag-Related Industries (Manufacturing, Designers), Construction Companies, Civil Engineering Firms, City, County and State Engineering Offices, Labs or Fields, Electrical Specialist Engineering, Recreational Industries, Mechanical Engineering Firms, Architecutral Engineering Firms.
Course Descriptions

**CAD 102 SolidWorks Part Modeling, 3 credits.**
Creation of 2D profiles will be transformed into 3D models. Models will be used to create drawings based on standards used in industry. Detailed drawings of these models will be included within this course curriculum.

**CAD 107 SolidWorks Assembly Modeling, 3 credits. (Prerequisite: CAD 102)**
The basics of SolidWorks assembly modeling will be explored, including bottom-up and top-down assembly. This course will also include how to use design libraries for fasteners and other parts that are used over and over again. Drawing creation of assembly models will also be covered during this course.

**CAD 112 Introduction to Mechanical Drafting, 4 credits. (Prerequisite: Concurrent enrollment in CAD 127 or Instructor Approval)**
Basic concepts and skills of mechanical drafting and use and knowledge of measurement tools are covered. Mechanical drafting fundamentals will be presented along with an explanation of standard drafting practices. Topics include will be orthographic projection, multiple view drawings, dimensioning, geometric dimensioning and tolerancing symbols, notes and a bill of materials.

**CAD 117 Intermediate Mechanical Drafting, 4 credits. (Prerequisite: CAD 112)**
Students learn intermediate level concepts and skills of mechanical drafting. Mechanical drafting fundamentals will be presented along with an explanation of standard drafting practices. The information covered will be how to produce a detail drawing of a part. Topics included will be; section views, auxiliary views, weld symbols and assembly drawings.

**CAD 127 Basics of AutoCAD, 4 credits.**
The Basics of AutoCAD course explores the fundamentals of computer-aided drafting (CAD) with emphasis placed on drawing set-up; creating and modifying geometry; placing, rotating and scaling objects; adding text and dimensions; using layers and coordinate systems; as well as using computer input and output devices.

**CAD 152 Residential Architecture with Revit, 4 credits.**
This course prepares the student in the area of Residential Architectural Drafting for an entry level position under an architect or engineer. Students will develop a set of residential floor plans using the latest AutoCAD software.

**CAD 157 Commercial Architecture with Revit, 3 credits. (Prerequisite: CAD 152)**
This course prepares the student in the area of Commercial Architectural Drafting for an entry level position under an architect or engineer. Students will develop a set of commercial floor plans using the latest AutoCAD software.

**CAD 167 Civil Drafting with AutoCAD Civil 3D, 4 credits. (Prerequisite: CAD 112 or CAD 127)**
Students learn to identify and draw different types of maps, identify different types of surveys, calculate leveling fields, global positioning system, map symbols and legal descriptions.

**CAD 172 Advanced Mechanical Drafting and Sheet Metal Design, 3 credits. (Prerequisite: CAD 117)**
This class covers the graphical analysis of points, lines and planes that are used in the development of plane geometry problems. Algebraic functions are used to compute and determine measurement results, and hands-on activities reinforce descriptive geometric theorems. Students use critical thinking, problem-solving, mathematical calculations and appropriate technology to solve spatial problems.
**CAD 182 Specific Industry Projects, 3 credits. (Prerequisite: CAD 117)**
The purpose of this class is to simulate a real-world drafting project. To complete this industry project, the student will be required to use all prior drafting knowledge obtained. Projects will vary, but the project will represent work that an employer would expect a graduate to be able to complete.

**MAT 101 Technical Math, 3 credits. (Prerequisite: MAT 100, MAT 090 or MAT 095 or qualifying COMPASS test score; qualifying Compass Reading score or concurrent enrollment in REA 090)**
This is an overview of mathematics course that focuses on technical applications. Topics include basic quantitative problem solving, algebra with technical applications, measurement, proportions, and geometry. This course is designed to provide students with the mathematical background necessary for entering technical career fields.