

MECHANICAL DESIGN ENGINEERING TECHNOLOGY (AAS)

Associate of Applied Science

Career-Technical Program

Interest Areas:

**Manufacturing and Trades
Science, Tech., Engr. and Math**

This program teaches drafting and engineering skills through CAD and places heavy emphasis on the needs of manufacturers. As such, there are two emphasis area pathways for students to choose between in pursuit of the A.A.S. degree in this program; machining or mathematics. All students will learn manufacturing principles with computer-aided design applications. The machining emphasis path provides students with skills in this in-demand medium as context for how they must design. The math emphasis pathway allows focus on the higher-level coursework in calculus, geometry and statistical methods which also rounds out the design technician as well as better preparing them for transfer options. There is a two-semester Intermediate Technical Certificate focused more squarely on design, as well as a four-semester advanced technical certificate.

**Trades & Industry Division
Parker Technical Education Center
7064 West Lancaster Road
Rathdrum, ID 83858
Phone: (208) 769-3448
Program Website (<https://www.nic.edu/cadt-mechanical/>)**

Machining Pathway Requirements

Course	Title	Credits
Semester 1		
MCTE-105	Technical Mathematics for Machining and Computer Aided Design Technologies	3
MDET-110	SolidWorks Basic	4
MDET-150	Machining Technology Theory I	4
MDET-151L	Machining Technology Lab I	5
Credits		16
Semester 2		
CAOT-165	Productivity Software for Technical Programs	1
MATH-143	Precalculus I: Algebra	3
MDET-115	Basic Mechanical Design	4
MDET-120	Intermediate SolidWorks	3
GEM 1 - A.A.S. Written Communication		3-4
Credits		14-15
Semester 3		
COMM-101	Fundamentals of Oral Communication	3
MDET-210	Advanced SolidWorks Techniques	3
MDET-220	Geometric Dimension and Tolerancing	3
MDET-235	Statics and Strength of Materials	3
A.A.S. Institutionally Designated		3-5
Credits		15-17

Semester 4		
ENGL-202	Technical Writing	3
MDET-215	Industrial Process	3
MDET-225	Machines and Mechanisms	3
MDET-230	Advanced Mechanical Design	4
GEM 6 - A.A.S. Social and Behavioral Ways of Knowing		3
Credits		16
Total Credits		61-64

Mathematics Pathway Requirements

Course	Title	Credits
Semester 1		
CAOT-165	Productivity Software for Technical Programs	1
MATH-143	Precalculus I: Algebra	3
MCTE-105	Technical Mathematics for Machining and Computer Aided Design Technologies	3
MDET-110	SolidWorks Basic	4
GEM 1 - A.A.S. Written Communication		3-4
Credits		14-15
Semester 2		
COMM-101	Fundamentals of Oral Communication	3
ENGL-202	Technical Writing	3
MATH-170	Calculus I	4
MDET-115	Basic Mechanical Design	4
MDET-120	Intermediate SolidWorks	3
Credits		17
Semester 3		
MATH-175	Analytic Geometry and Calculus II	4
MDET-210	Advanced SolidWorks Techniques	3
MDET-220	Geometric Dimension and Tolerancing	3
MDET-235	Statics and Strength of Materials	3
A.A.S. Institutionally Designated		3-5
Credits		16-18
Semester 4		
MATH-153	Statistical Reasoning	3
MDET-215	Industrial Process	3
MDET-225	Machines and Mechanisms	3
MDET-230	Advanced Mechanical Design	4
GEM 6 - A.A.S. Social and Behavioral Ways of Knowing		3
Credits		16
Total Credits		63-66

Course Key



GEM


AAS
Institutionally
Designated


Gateway



Milestone

Program Outcomes

Upon completion of the program, students will be able to:

1. Demonstrate basic three-dimensional (3D) Computer Aided Design (CAD) software commands, in a related pedagogical sequence to generate geometric constructs to create parametric feature-based geometry methodology for parts, assemblies, and drawings.
2. Use Microsoft Office for Word, Excel, and PowerPoint as well as the internet.

3. Apply mathematical skills to plan, calculate and execute precision measuring techniques to validate design and manufacturing applications for parts and assemblies.
4. Interpret and apply American National Standards Institute (ANSI) standards to produce detailed working drawings used in contemporary manufacturing industries.
5. Demonstrate appropriate work relationships and habits, communication and computational skills used in contemporary technical industries.
6. Demonstrate form, fit, and functional requirements with parametric feature-based modeling methodology.
7. Create, evaluate, and validate 3-D part functionality by utilizing CAD/CAM software and additive manufacturing technology.
8. Interpret, calculate and demonstrate the application of Geometric Dimensioning & Tolerancing in accordance with AMSE Y14.5 standards.
9. Use Technical mathematical skills to calculate and predict statics and strength of materials and/or Kinematic analysis for mechanisms.
10. Apply basics and intermediate design principles for mechanical design in accordance with manufacturing processes.
11. Demonstrate product cycle methodology, incorporating accumulated curriculum skill sets to plan, design, construct, for final design project.
12. Demonstrate ability to think quantitatively, evaluate data, and draw conclusions using sound mathematical principles and practices.

In addition to the program outcomes, students will meet the following North Idaho College General Education (GEM) Requirements: Written and Oral Communication; Mathematical Ways of Knowing; Social and Behavioral Ways of Knowing; and an additional program-designated or selected course from any of the GEM requirements.