

# MECHANICAL DESIGN ENGINEERING TECHNOLOGY (ATC)

## Advanced Technical Certificate

### Career-Technical Program

#### Interest Areas:

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

This program teaches drafting and engineering skills through CAD and placed heavy emphasis on the needs of manufacturers. All students will learn manufacturing principles with computer-aided design applications. Students are also provided the opportunity to apply their skills specifically to the machining discipline.

**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/>)

## Program Requirements

Course	Title	Credits
<b>Semester 1</b>		
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
<b>Credits</b>		<b>16</b>
<b>Semester 2</b>		
ATEC-117	Occupational Relations and Job Search	2
CAOT-165	Productivity Software for Technical Programs	1
MDET-115	Basic Mechanical Design	4
MDET-120	Intermediate SolidWorks	3
GEM 1 - A.A.S. Written Communication		3-4
<b>Credits</b>		<b>13-14</b>
<b>Semester 3</b>		
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
<b>Credits</b>		<b>12</b>
<b>Semester 4</b>		
ENGL-202	Technical Writing	3
MDET-215	Industrial Process	3
MDET-225	Machines and Mechanisms	3
MDET-230	Advanced Mechanical Design	4
<b>Credits</b>		<b>13</b>
<b>Total Credits</b>		<b>54-55</b>

## 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 access 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 Y4.5 standards.
9. Use technical mathematical skills to calculate and predict statics and strength of materials and/or Kinematic analysis for mechanisms.
10. Apply basic 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.