

# COMPUTER AIDED DESIGN TECHNOLOGY–MECHANICAL DESIGN OPTION (ATC)

## Advanced Technical Certificate

### Career-Technical Program

#### Interest Areas:

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

The Computer Aided Design Technology program offers students the opportunity to learn skills required by today's industries. Students can pursue a two-semester intermediate technical certificate, a four-semester advanced technical certificate, and a four-semester associate of applied science degree. Portions of the associate of applied science degree options may transfer to various four-year institutions. Students entering the A.A.S. degree program should be prepared to complete A.A.S. math and English requirements during the first year of the program. Placement in specific English and math courses is determined by the college placement assessments.

**Current industry professionals may enroll in a single course on a space available basis and with instructor permission.**

Gainful Employment Information (<https://www.nic.edu/programs/ge/104-CC2/Gedt.html>)

Program Website ([https://www.nic.edu/programs/viewprogram.aspx?program\\_id=104](https://www.nic.edu/programs/viewprogram.aspx?program_id=104))

## Program Requirements

Course	Title	Credits
<b>Semester 1</b>		
CADT-104M	CAD Graphics I - Mechanical Applications	2
CADT-106M	CAD Graphics II - Mechanical Applications	2
CAOT-164	Computer Fundamentals for Technical Programs	1
CAOT-165	Productivity Software for Technical Programs	1
MACH-153	Precision Measuring	1
ECTE-100 or ENGL-101	Fundamentals for Writing or English Composition	3
Select one of the following:		3-5
MCTE-105	Technical Mathematics for Machining and Computer Aided Design Technologies	
GEM 3 - A.A.S. Mathematical Ways of Knowing		
Credits		13-15
<b>Semester 2</b>		
ATEC-117	Occupational Relations and Job Search	2
CADT-105	Descriptive Geometry	3
CADT-109	Basic Mechanical Design	4
CAOT-166	Living Online for Technical Program	1
MACH-201	Design for Manufacturing	1
Credits		11
<b>Semester 3</b>		
CADT-250	SolidWorks I	2
CADT-252	SolidWorks II	2

CADT-253	Industrial Processes	3
CADT-255	Geometric Dimension and Tolerancing	3
MACH-231	Computers in Machining	3
A.A.S. Institutionally Designated		2
Credits		15
<b>Semester 4</b>		
CADT-254	Power Transmission	3
CADT-257	Advanced Mechanical Design	4
CADT-261	Statics and Strengths of Materials	3
A.A.S. Institutionally Designated		3
Credits		13
Total Credits		52-54

### Course Key



GEM



WCHE



AAS



Gateway



Milestone

Institutionally  
Designated

## Program Outcomes

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

- Access, understand, and apply two-dimensional (2D) Computer-Aided Design (CAD) commands in a related pedagogical sequence(s), generating geometric constructs to illustrate command mastery.
- Use a computer to word process, create spreadsheets, and access the internet.
- Utilize mathematical skills to calculate, plan, and execute precision measuring techniques to validate design and manufacturing applications for parts and assemblies.
- Read, interpret and apply American National Standards Institute (ANSI) standards to produce detailed working drawings used in contemporary manufacturing.
- Demonstrate appropriate work relationships and habits, communication skills, and computational skills used in contemporary technical industries.
- Access, understand, and apply three-dimensional (3D) Computer-Aided Design (CAD) technology applications to design and create parametric feature-based geometry methodology of parts, assemblies, and drawings.
- Analyze and test form, fit, and functional requirements of parametric feature-based geometry models.
- Evaluate and validate part creation and functionality by utilizing CAD/CAM software and additive manufacturing (3D Printing) technology.
- Interpret, calculate and apply geometric and tolerancing methods following ASME Y14.5 standards to control form, fit, and functional requirements.
- Use mathematical skills to calculate and predict statics and strength of materials and/or kinematics to support roll-form processes.
- Understand and apply basic to intermediate design principles for mechanical design technology and manufacturing processes in line with contemporary industry.
- Determine and use product cycle methodology incorporating accumulated curriculum skill sets to plan, design, construct, and illustrate final mechanical design projects.