

# CVTC Redesign of Nanoscience Technician to Engineering Technology (STEM Programs)

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## NEW PROGRAMS

Engineering technology

Industrial  
Nano  
Manufacturing

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engineering technology programs



Chippewa Valley Technical College  
100 Years of Proven Education



# CVTC Counties and Campuses



**Redesign of Nanoscience AAS to Engineering Technology AAS**

**A 3 Program Model**





- 2005 Nanoscience program begins at CVTC

1000 sq foot class 100 cleanroom constructed  
Cleanroom equipped for chip/electronics fab  
Model program partnered with Dakota County Technical College  
and University of Minnesota  
Capstone courses at U of M

- 2008 NSF-ATE Nano-Link grant initiated
- 2009-2011 transition to local university partners

DACUM development conducted for :  
Nano materials  
Chemical Laboratory Technician  
Biotechnology

- 2010  
Recruitment, retention, and placement concerns

- 2011  
Program redesign

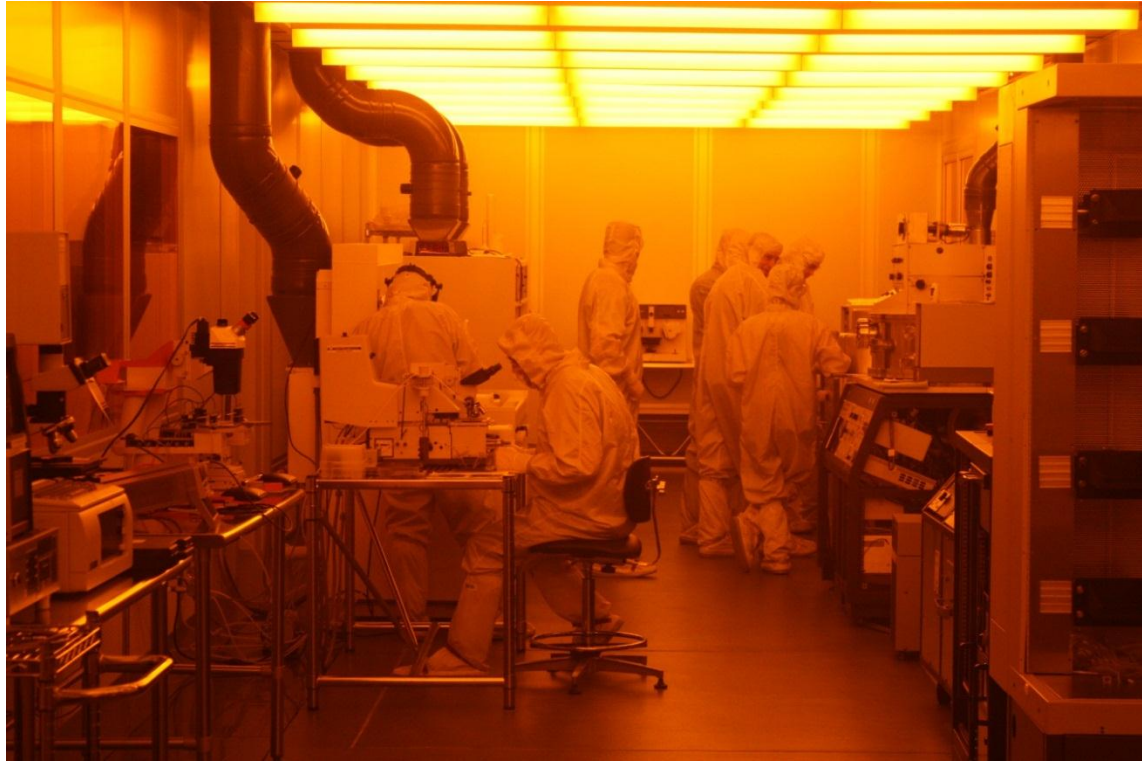




## Pros:

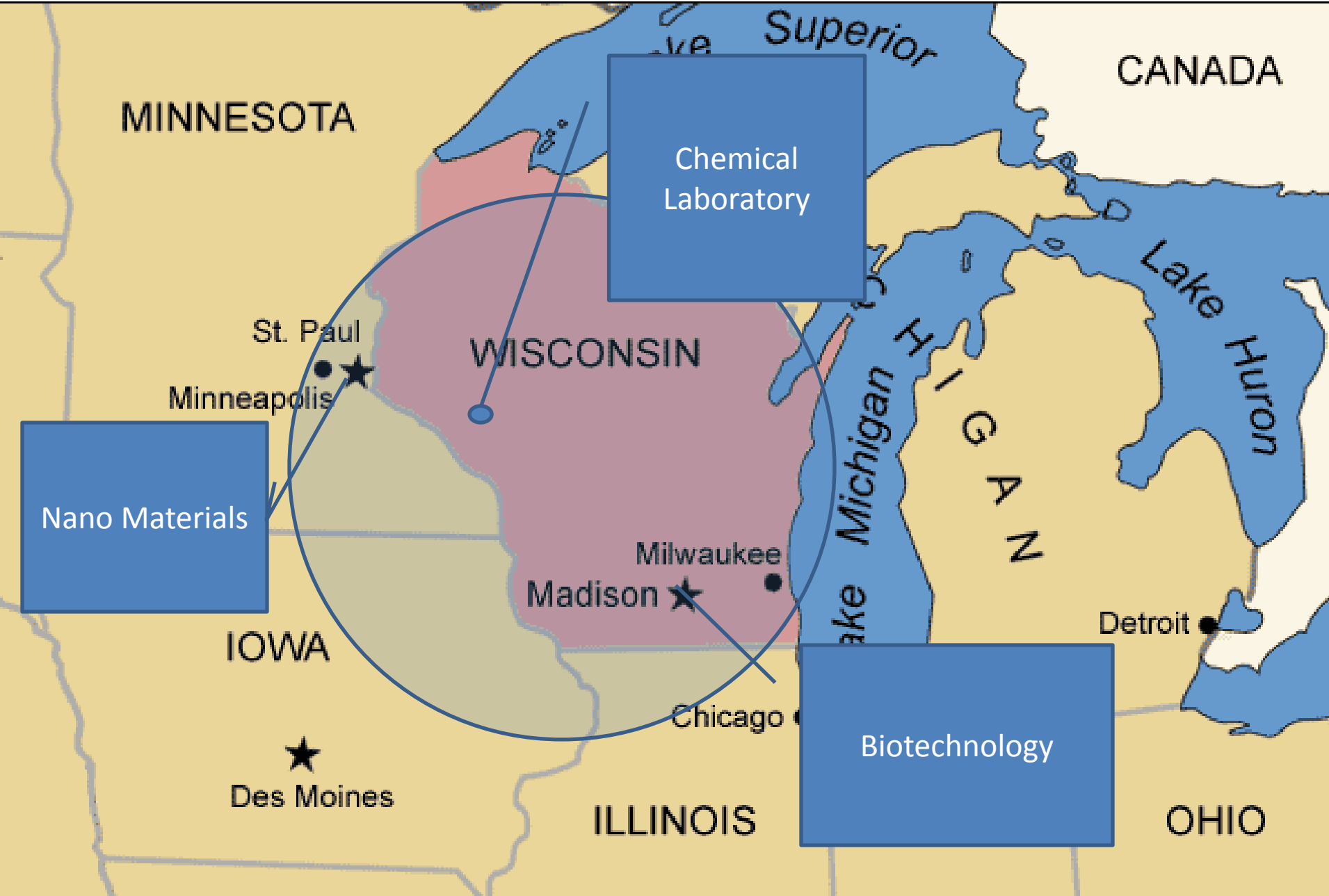
- Program start
- 28 students / year capacity
- Single August start
- 79%-94% completion
- 67% -82% retention
- 83%-0% placement
- 40% transfer to 4 year degrees \*

(\* Applied Science /  
Engineering Technology)



## Cons:

- Student expectations
- Student readiness
- Student retention
- Student completion
- Industry identity
- Economic downturn: Loss of major micro/nano employer
- Second major employer offshored nano related process



# Examples of Regional Companies that have a Micro, Nano, or Bio Connection

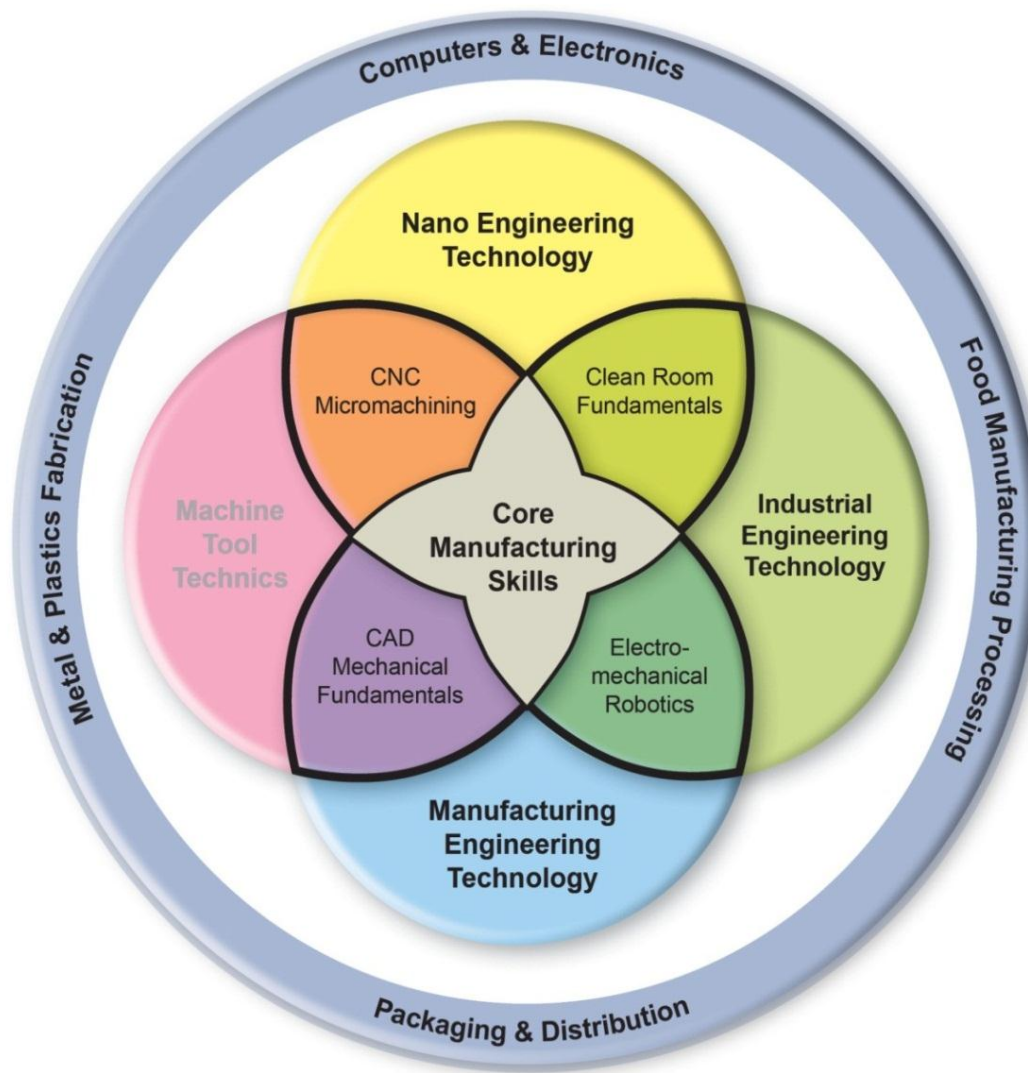




# DESIGN GOALS

- Increase program identity with regional employers
- Increase student recruitment and readiness
- Increase graduate placement
- Strengthen education transfer articulations
- Minimize costs for low enrolled cohorts
- Meet the needs of employers

## Manufacturing and Engineering Career Pathway Model





# Program design criteria

Transcripted Credits  
with HS

Common First Year  
Courses

Shared Courses

Courses Aligned with  
Employers

Courses Aligned with  
BS Degree  
Institutions

Articulations

# Nano Engineering Technology

## AAS – 67 cr

- Prepares graduates to work with micro and nano systems in electronics, food processing, bio-technology, nanoscience, medical device, pharmaceutical production, and other industrial laboratory applications.
- Job titles include:
  - Micro or Nano Systems Engineering Technician
  - Biotechnologist / Biological Laboratory Technician
  - Quality Assurance Technician
  - Research Technician
  - Materials Engineering Technician
  - Cleanroom Technician
  - Microscope Operator
  - Scanning Electron Microscope Operator



# Common Core -AAS Sem 1

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801-195	Written Communications	3
804-115	College Tech Math 1	5
806-134 OR 806-245	General Chemistry or Principles of General Chemistry	4
606-185	Blueprint Reading (TC)	1
623-108	Intro to Manufacturing Lab Science	3

# Common Core– AAS - Sem 2

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103-102	Microsoft Office Suite (TC)	2
809-196	Intro to Sociology	3
635-118	Intro to Biotechnology (TC)	3
623-132	Workplace Safety	2
606-161	CAD Basic (TC), (C*)	3
804-116	College Tech Math 2	4



# Industrial Engineering Technician

## AAS – 65 cr

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- Prepares graduates to work in regional food processing, biotechnology, nanoscience, and other industrial laboratories to assist in basic research, product development, product testing, equipment maintenance, quality assurance, and product safety.
- Job titles include:
  - Food Laboratory Technician
  - Food Production Technician
  - Industrial Laboratory Technician
  - Biological Laboratory Technician
  - Quality Assurance Technician
  - Research Technician
  - Cleanroom Technician
  - Microscope Operator



# Industrial Engineering Technician – AAS – Sem 3

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801-196	Oral Interpersonal	3
804-189	Introductory Statistics	3
635-108	Micro and Nano Fab	2
623-116	Lab Electronics	3
635-105	Nanomaterials	3
635-103	Lab Science Instrumentation	2

# Industrial Engineering Technician – AAS – Sem 4

625-110	Manufacturing and QA	3
809-198	Intro to Psychology	3
635-119	Hazard Analysis and Critical Control Points (HACCP)	2
625-160	Core Manufacturing Skills (TC)	2
635-150	Manufacturing Processes and Lab Science	2
102-112 Or 196-188 Or 606-161	Selective: Principles of Management or Project Management or CAD Basic (TC)	3

# Contacts

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- <http://www.nano-link.org/>
  - Presentation
  - Modules
- <http://www.cvtc.edu>
  - Chippewa Valley Technical College home page
  - Search under program catalog/engineering programs
- Mark Hendrickson
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