Coordinating Commission for Postsecondary Education
Review of Existing Instructional Programs

Institution: Central Community College **Program:** Advanced Manufacturing Design Technology

I certify the following:
- the information provided regarding this program is accurate
- the above named institution has in place a procedure for reviewing instructional programs
- such review took place and was presented to the institution's governing board on **May 19, 2022**
- the governing board's action was: _____

Signed: _____ _____
(Chief Academic Officer or designated representative) (Date)

Evidence of Demand and Efficiency

		16-17	17-18	18-19	19-20	20-21	5 yr avg
Student Credit Hours (SCH)		1,206	1,468	1,415	1,277	1,032	**1,279.60**
Faculty Full-time Equivalency (FTE)		4.89	5.77	5.67	4.30	4.32	**4.99**
SCH/Faculty FTE		246.63	254.42	249.56	296.98	238.89	**256.43**
Number of Degrees and Awards *(list degrees/ awards separately)*	**AAS**	16	7	15	18	14	14
	Diploma	17	14	25	21	13	18
	Certificate	54	92	101	85	82	82.8
	Total Awards	87	113	141	124	109	114.8
	# of Unduplicated Graduates	42	56	78	61	61	59.6

Evidence of Need (provide a detailed explanation below or attach documentation)

See attached

Justification if the program is below either of the CCPE thresholds—complete page 2

_____
For CCPE use: reviewer/date

Justification if the program is below CCPE thresholds—check one or more boxes and provide a detailed explanation or attach a document

[X] Program is critical to the role and mission of the institution (detailed explanation).

Only program of its kind available in the institution's 25-county service area.

[ ] Program contains courses supporting general education or other programs (detailed explanation).

[ ] Interdisciplinary program (providing the program meets the requirements set in the existing policy
for interdisciplinary programs) (explain).

[X] Student or employer demand, or demand for intellectual property is high and external funding would be jeopardized by discontinuing the program (explain).

Jobs within this field are considered H3 jobs (High Wage, High Demand, High Skill)

[ ] Program provides unique access to an underserved population or geographical area (explain).

[X] Program meets a unique need in the region, state, or nation (explain).

Jobs within this field are considered H3 jobs (High Wage, High Demand, High Skill). Institution's service area includes high demand of medical and agricultural needs which the AMDT program helps fulfill.

[ ] Program is newly approved within the last five years (no additional justification needed).

[ ] Other (detailed explanation).

Central Community College

Advanced Manufacturing Design Technology

Coordinating Commission Seven-Year Review
2022

Information in this report reviewed and recommended to cabinet:

Central Community College Educational Services, 4/28/2022

Recommended continuation of programs without monitoring:

Central Community College College Cabinet, 05/11/2022
Central Community College Board of Governors, XXXXXX

Bruce Bartos – Program Faculty
Adam Daake – Program Faculty
Brian Davis – Program Faculty
Troy Davis – Program Faculty

Alison Feeney – Associate Dean of Instruction, Skilled & Technical Sciences
Dr. Nate Allen – Dean of Instruction, Skilled & Technical Sciences
Dr. Jerry Wallace – Division Vice President, Skilled & Technical Sciences

Advanced Manufacturing Design Technology

Program Review Summary – Dr. Nate Allen

The Advanced Manufacturing Design Technology (AMDT) program is currently offered in three locations: Columbus, Hastings, and Kearney. The Columbus campus has been pared back to a certificate program but recently added a new certificate in Plastic Injection Molding Engineering Technology through an National Science Foundation grant for plastics technology. The Hastings campus offers certificates, diplomas, and the AAS degree. Kearney offers a certificate and the diploma. Students in both Columbus and Kearney can complete an AAS degree in Hastings. There are three full-time instructors in Hastings, one in Kearney and a part-time instructor in Columbus.

Economic Modeling Specialist International (EMSI) data suggests the industry needs for employees from 2015-2025 is growing in our service-area by 13.7%. Program instructors consistently report students typically have multiple job offers before they graduate. There were 1750 AMDT related jobs posted in this area in 2021. We are described as a hotspot. The median salary of $42,781 for this area is just under the national average of $43,905.

Several area high schools offer CCC credits through established pathway programs: Columbus High School, Grand Island Senior High, Hastings High School, South Central Unified District # 5 (Sandy Creek High School). Maintaining relationships with each of these programs maintains a pathway for students to matriculate to CCC upon high school graduation.

The program has a five-year average of just shy of 115 awards granted annually with an average of 14 AAS degrees, 18 diplomas, and 82 certificates. Like most programs at CCC, the AMDT has a laddered structure of awards from certificate to diploma to AAS degree. The program currently offers four certificates, a diploma, and an AAS degree. The new certificate in plastics will be available beginning fall 2022. The number of awards is driven by an 88% course completion rate with 94% of graduates working full-time or continuing their education. Upon completion of an AAS degree in AMDT, students can pursue a second degree in Drafting and Design Technology with a one-year commitment making these students even more valuable in industry.

The facilities in Columbus were updated within the past ten years, Kearney was new in 2017, and Hastings built an addition for AMDT which they moved into January 2020.

The Advanced Manufacturing Design Technology program exceeds the minimum threshold for number of graduates but is below the threshold for student credit hours to full-time equivalent faculty (FTEF) ratio. We believe this is in large part due to credits offered and enrollments at two of our locations. Skilled & Technical Sciences leadership recommends continuation of the program.

I. **Program:** **Advanced Manufacturing Design Technology (AMDT)**

II. **College Mission: Central Community College maximizes student and community success.**

III. **College Vision: The Best Choice –**

for students to achieve their educational goals.

- quality education
- personal service and individualized attention
- exceptional and passionate faculty and staff
- extraordinary value

for developing a skilled workforce.

- employability and/or successful credit transfers
- graduates who advocate for CCC
- business and industry partnerships
- state-of-the-art facilities and technologies

for advancing communities.

- educational partnerships
- strong alumni support
- foster economic development
- sustainability leaders

IV. **Program Mission Statement: Exceeding industry expectations by educating students on fundamentals, CNC Machining, Mold/Die and CAD/CAM.**

V. **Program Vision Statement: Continue to work closely with our advisory board members and industry partners by providing them with quality employees taught in state-of-the-art facilities with current/relevant curriculum.**

EMSI Q4 2021 Data Set

EMSI data is a hybrid dataset derived from official government sources such as the US Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics. Leveraging the unique strengths of each source, our data modeling team creates an authoritative dataset that captures more than 99% of all workers in the United States. This core offering is then enriched with data from online social profiles, resumes, and job postings to give you a complete view of the workforce.

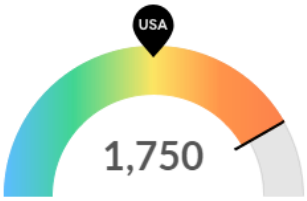
Report Parameters

4 Occupations

17-3013 Mechanical Drafters	**51-4111 Tool and Die Makers**
51-4041 Machinists	**51-4072 Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic**

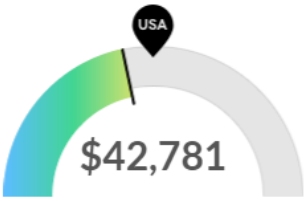
Executive Summary

Aggressive Job Posting Demand Over a Deep Supply of Regional Jobs



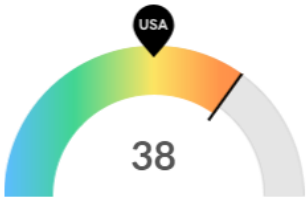
Jobs (2021)

Your area is a hotspot for this kind of job. The national average for an area this size is 672* employees, while there are 1,750 here.



Compensation

Earnings are about average in your area. The national median salary for your occupations is $43,905, compared to $42,781 here.



Job Posting Demand

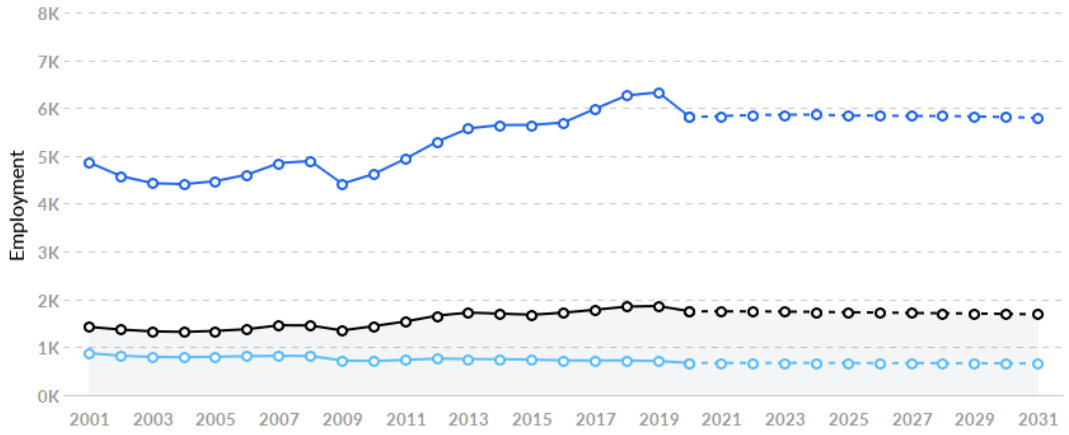
Job posting activity is high in your area. The national average for an area this size is 22* job postings/mo, while there are 38 here.

*National average values are derived by taking the national value for your occupations and scaling it down to account for the difference in overall workforce size between the nation and your area. In other words, the values represent the national average adjusted for region size.

Jobs

Regional Employment Is Higher Than the National Average

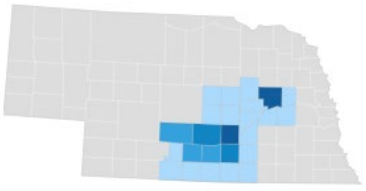
An average area of this size typically has 672* jobs, while there are 1,750 here. This higher than average supply of jobs may make it easier for workers in this field to find employment in your area.



	Region	2021 Jobs	2026 Jobs	Change	% Change
●	CCC Service Area	1,750	1,725	-25	-1.5%
●	National Average	672	669	-3	-0.4%
●	State of Nebraska	5,833	5,841	8	0.1%

*National average values are derived by taking the national value for your occupations and scaling it down to account for the difference in overall workforce size between the nation and your area. In other words, the values represent the national average adjusted for region size.

Regional Breakdown



County	2021 Jobs
Platte County, NE	415
Hall County, NE	375
Buffalo County, NE	347
Adams County, NE	310
Dawson County, NE	99

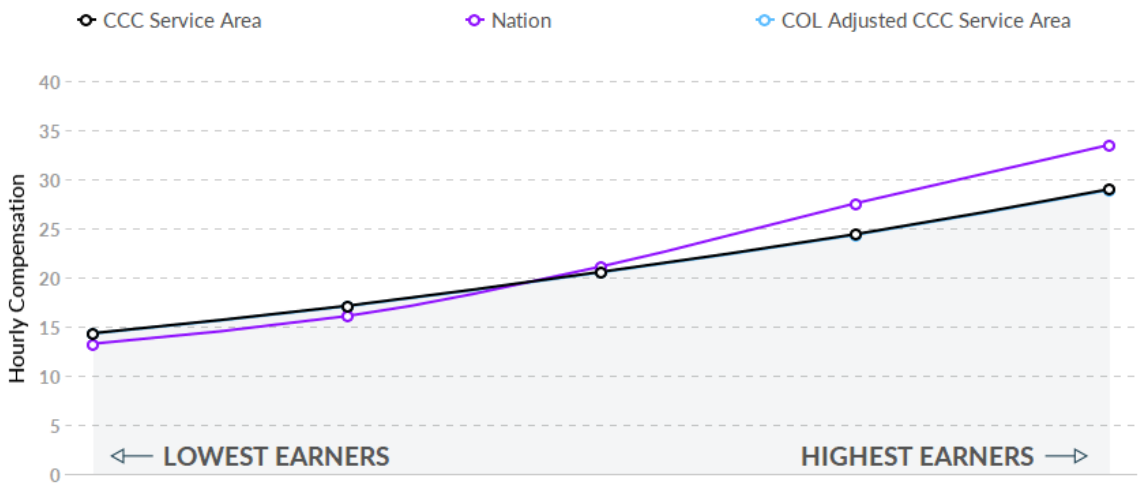
Most Jobs are Found in the Motor Vehicle Parts Manufacturing Industry Sector

Industry	% of Occupation in Industry (2021)
Motor Vehicle Parts Manufacturing	15.1%
Plastics Product Manufacturing	13.0%
Medical Equipment and Supplies Manufacturing	10.7%
Agriculture, Construction, and Mining Machinery Manufacturing	9.6%
Other Fabricated Metal Product Manufacturing	8.4%
Other General Purpose Machinery Manufacturing	5.7%
Other	37.4%

Compensation

Regional Compensation Is 3% Lower Than National Compensation

For your occupations, the 2020 median wage in your area is $20.57/hr, while the national median wage is $21.11/hr.



Job Posting Activity

219 Unique Job Postings

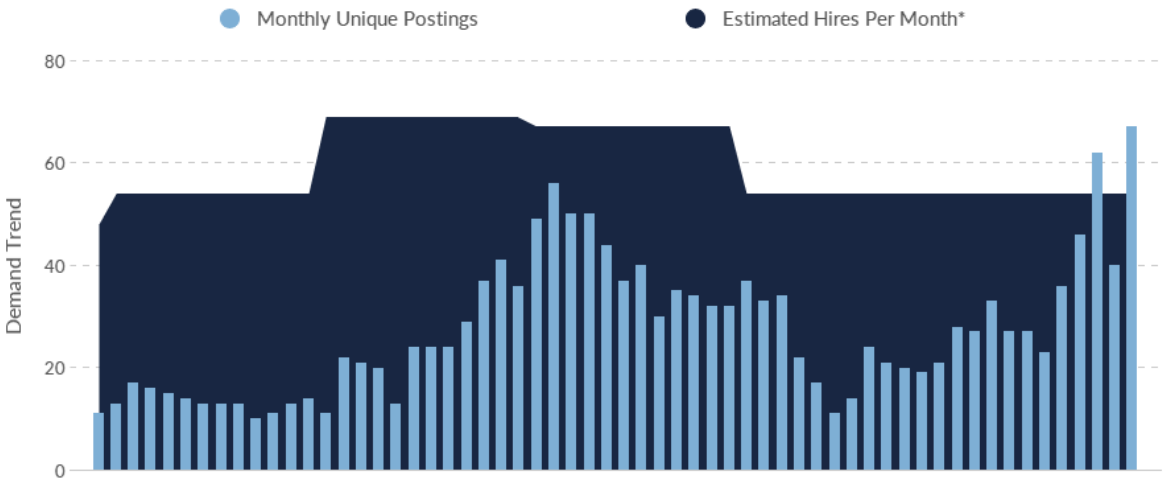
The number of unique postings for this job from Jan 2021 to Nov 2021.

49 Employers Competing

All employers in the region who posted for this job from Jan 2021 to Nov 2021.

14 Day Median Duration

Posting duration is 15 days shorter than what's typical in the region.



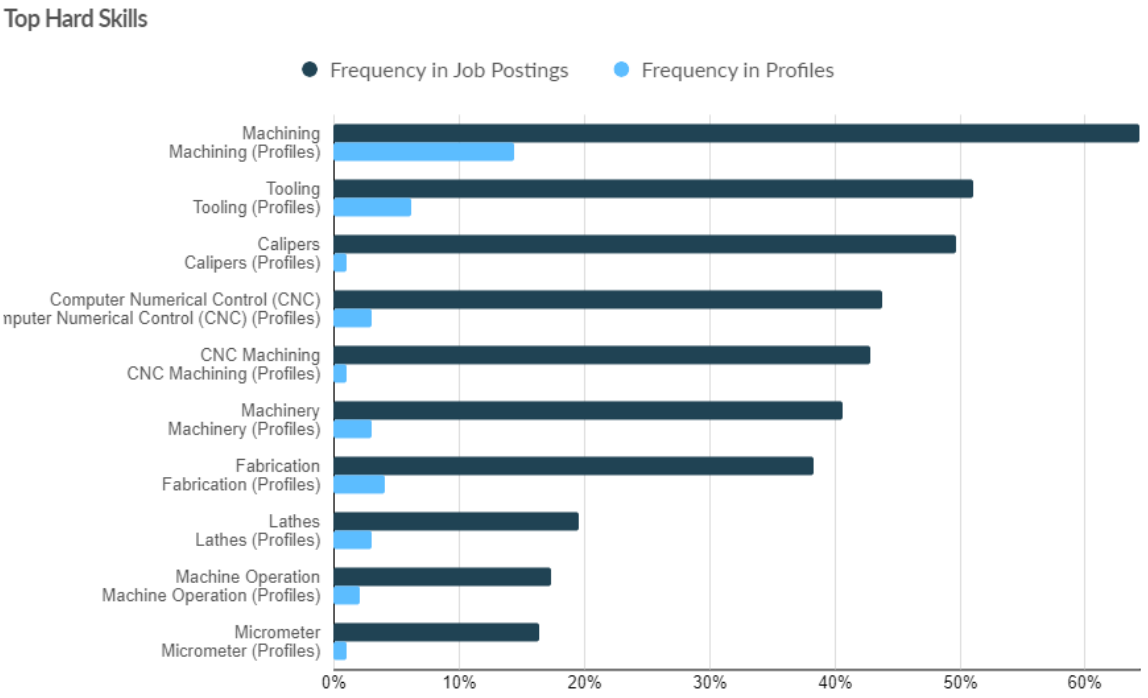
Occupation	Avg Monthly Postings (Jan 2021 - Nov 2021)	Avg Monthly Hires (Jan 2021 - Nov 2021)
Machinists	29	22
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	6	19
Mechanical Drafters	2	5
Tool and Die Makers	1	8

*A hire is reported by the Quarterly Workforce Indicators when an individual's Social Security Number appears on a company's payroll and was not there the quarter before. Emsi hires are calculated using a combination of Emsi jobs data, information on separation rates from the Bureau of Labor Statistics (BLS), and industry-based hires data from the Census Bureau.

Top Companies	Unique Postings
Flowserve	68
ASSOCIATED STAFFING	17
BD	16
Essential Personnel	9
Hastings	6
Inter-Motion	4
Vishay Intertechnology	4
Camaco	3
Chief Industries	3
Columbus Hydraulics	3

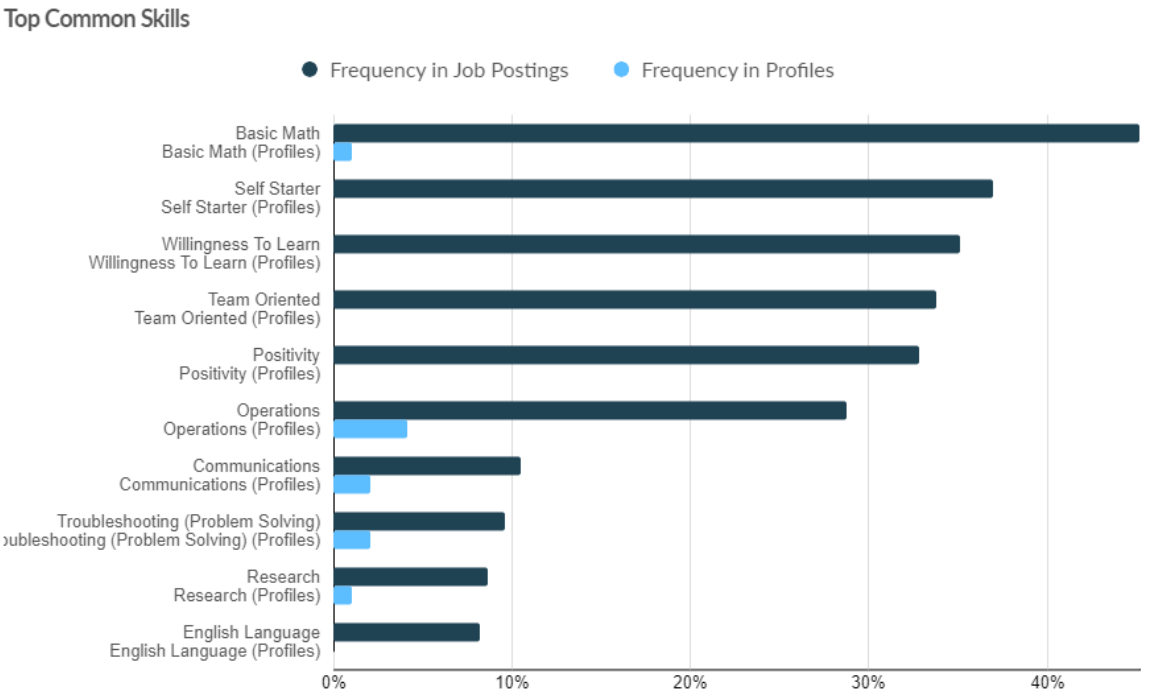
Top Job Titles	Unique Postings
Machinists	77
CNC Machinists	31
Drafters	9
Molding Operators	8
Molding Managers	7
Operations Specialists 2nd Cl	7
Mold Makers	6
Tool Makers	4
Tool and Die Makers	4
Lead CNC Machinists	3

Top Hard Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Machining	141	64%	14	14%
Tooling	112	51%	6	6%
Calipers	109	50%	1	1%
Computer Numerical Control (CNC)	96	44%	3	3%
CNC Machining	94	43%	1	1%
Machinery	89	41%	3	3%
Fabrication	84	38%	4	4%
Lathes	43	20%	3	3%
Machine Operation	38	17%	2	2%
Micrometer	36	16%	1	1%

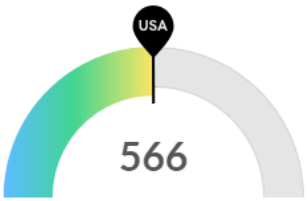
Top Common Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Basic Math	99	45%	1	1%
Self Starter	81	37%	0	0%
Willingness To Learn	77	35%	0	0%
Team Oriented	74	34%	0	0%
Positivity	72	33%	0	0%
Operations	63	29%	4	4%
Communications	23	11%	2	2%
Troubleshooting (Problem Solving)	21	10%	2	2%
Research	19	9%	1	1%
English Language	18	8%	0	0%

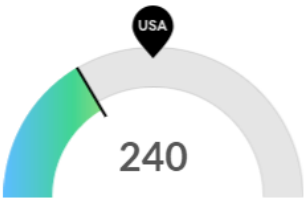
Demographics

Retirement Risk Is About Average, While Overall Diversity Is Low



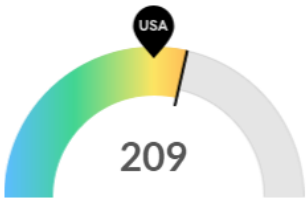
Retiring Soon

Retirement risk is about average in your area. The national average for an area this size is 567* employees 55 or older, while there are 566 here.



Racial Diversity

Racial diversity is low in your area. The national average for an area this size is 415* racially diverse employees, while there are 240 here.



Gender Diversity

Gender diversity is high in your area. The national average for an area this size is 171* female employees, while there are 209 here.

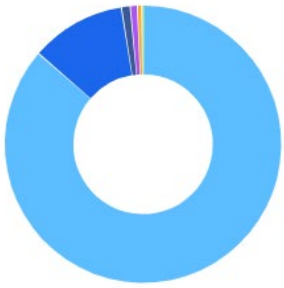
*National average values are derived by taking the national value for your occupations and scaling it down to account for the difference in overall workforce size between the nation and your area. In other words, the values represent the national average adjusted for region size.

Graduate Pipeline

Occupation Age Breakdown

	% of Jobs	Jobs
14-18	0.5%	9
19-24	6.1%	107
25-34	18.2%	318
35-44	19.9%	348
45-54	23.0%	402
55-64	25.7%	449
65+	6.7%	117

Occupation Race/Ethnicity Breakdown



	% of Jobs	Jobs
White	86.3%	1,510
Hispanic or Latino	11.1%	195
Asian	1.0%	18
Black or African American	0.8%	14
Two or More Races	0.5%	9
American Indian or Alaska Native	0.2%	4
Native Hawaiian or Other Pacific Islander	0.0%	0

Occupation Gender Breakdown

	% of Jobs	Jobs
Males	88.1%	1,541
Females	11.9%	209

3 Programs

Of the programs that can train for this job, 3 have produced completions in the last 5 years.

298 Completions (2020)

The completions from all regional institutions for all degree types.

195 Openings (2020)

The average number of openings for an occupation in the region is 28.

CIP Code	Top Programs	Completions (2020)
48.0501	Machine Tool Technology/Machinist	124
47.0303	Industrial Mechanics and Maintenance Technology/Technician	112
15.1301	Drafting and Design Technology/Technician, General	62

Top Schools	Completions (2020)
Central Community College	298

2022 Summary of EMSI Data:

Data shows ten-year increase of 13.7% for job opportunities from 2015-2025 for our service-area. Data from the past year shows a dramatic reduction down to -1.5% from 2016-2026. Employers in our service-area continues to offer graduates numerous employment opportunities in our region when compared to other similar sized regions. Based on interest from employers visiting the AMDT program to recruit graduates, we believe there are still far more job opportunities than students and graduates. There appear to be hundreds of openings from outstanding companies. Companies posting openings directly related to our educational goals are in the medical, automotive, and agricultural fields. Companies seeking qualified applicants looking first for experience and training in machining exhibiting skills in math and troubleshooting. Wages in the region are trending up and now within 3% of what employers across the nation are offering.

A. Supporting Data

a. Awards

Degree/ Credential Awarded	16-17	17-18	18-19	19-20	20-21	5-yr avg
AAS	16	7	15	18	14	14
Diploma	17	14	25	21	13	18
Certificate	54	92	101	85	82	82.8
Total Awards	87	113	141	124	109	114.8
# of Unduplicated Graduates	42	56	78	61	61	59.6

2022 Summary of Awards:
We experienced a decline in awards in 20-21 compared to 18-19 and 19-20. We believe this is due to some students choosing to take a semester off from their studies instead of having to learn hands-on skills through the internet. Additionally, during 20-21 COVID restrictions severely limited our offsite recruiting opportunities. While our 20-21 award numbers were down, we managed to hold steady to our five-year average with degrees, diplomas, and certificates.

b. Student Credit Hours Produced per Faculty FTE

	16-17	17-18	18-19	19-20	20-21	5 yr avg
Student Credit Hours (SCH)	1,206	1,468	1,415	1,277	1,032	**1,279.60**
Faculty Full-time Equivalency (FTE)	4.89	5.77	5.67	4.30	4.32	**4.99**
SCH/Faculty FTE	246.63	254.42	249.56	296.98	238.89	**256.43**

2022 Summary of the Student Credit Hours per Faculty FTE:
The above chart represents the student credit hours produced per faculty FTE in the Advanced Manufacturing Design Technology program. Student credit hours generated have been declining for the past few years. There are at least a couple of reasons for this. The Columbus campus had a full-time faculty member retire a few years ago and the position was not replaced due to low student enrollments in the program. Columbus has been functioning as a part-time program since then. When the Kearney Center opened fall 2017, due to space limitations only courses through the diploma have been offered which impacts enrollment numbers. The full-time instructor in Kearney retired after the spring 2019 semester. We replaced the full-time position summer 2020 in the middle of COVID and have not since recovered those enrollments. Additionally, COVID has had a negative impact on the Hastings program; some students are choosing to sit out for a period of time due to COVID restrictions and uncertainty of course delivery method as well as fewer new students starting due to uncertainty. Recruiting has been negatively impacted due to not being able to participate in high school visits and career fairs in which the AMDT faculty has been actively participating. Prior to COVID, enrollments in Hastings had been steady. We anticipate enrollments to climb now that COVID restrictions have lessened. There is a need to reconnect with pathway programs and strengthen those relationships.

While the faculty FTE has been reduced, the drop in student credit hours has held the ratio below the threshold. The faculty are addressing the short-term impacts. One way this is being done is to add credit offerings for Plastic Injection Molding on the Columbus campus, with a certificate in Plastic Injection Molding Engineering to meet industry needs. This will allow two certificates to be obtained by students in Columbus. We are also exploring teaching opportunities for the AMDT instructor in Kearney to teach courses in the Mechatronics program along with AMDT courses.

2022 Summary Statement:
The Advanced Manufacturing Design Technology program with certificate, diploma, and degree offerings in Hastings, certificate and diploma offerings in Kearney, and certificate offerings in Columbus are below the threshold for student credit hours to faculty FTE. The program is well above the threshold for number of graduation awards.

The Advanced Manufacturing Design Technology program faculty recognize the need to keep up with current changes in industry. We continually update and modify our curriculum incorporating new ideas and methodologies to exceed the perceptions of what a program can and should be.

Recent accolades to the AMDT program include making the cover of *Moldmaking Technology*, a national publication, along with being interviewed in a Minnesota Precision Manufacturing Journal. We are now the newest Haas Teacher Training Center in the United States, training educators in CNC Turning, Milling and Multi-Axis classes. Educators looking to learn about CNC technology on Haas equipment come to us from across the globe.

With the addition of our Futures Lab, students also train on CNC Laser, CNC Waterjet, Metal 3D Printing and Robotic technology which adds more employment opportunities for students.

The need to maintain connections with our high school career pathway programs remains of high importance. Without students, the ability to produce graduates is hindered regardless of course completion and retention rates.

Our graduates fill entry level positions and bring new technology experience and techniques with them to their employers. This keeps them competitive in today's workplace. The increase in new positions created by industry for our graduates has reaffirmed our goals set by faculty. Graduates are highly respected, and the program has an excellent reputation with our employers, students as well as other educational systems throughout the state and nation. Average monthly wage earned with an AMDT AAS degree is $4,000.00.