



South Dakota Board of  
**Technical Education**

April 22, 2024

Lake Area Technical College  
1201 Arrow Ave. NE  
Watertown, SD 57201

**RE: South Dakota Board of Technical Education Approval of:  
Non-Substantive Program Application  
Long-Term Certificate in Manufacturing Maintenance Technician Upskill**

To whom it may concern:

After review, the executive director has approved above application.

Per Board Policy 303.3, the receipt of this letter completes the SDBOTE's approval process, and the technical college may proceed with program implementation.

The SDBOTE's approval is valid for three years upon the date of this letter. If a technical college does not implement an approved program within three years, approval is terminated.

A technical college must update the program's profile in the SDBOTE's Academic Program Database by June 30 prior to the year in which students are first enrolled or at least 30 days prior to enrolling students, whichever is first.

Sincerely,

A handwritten signature in black ink that reads "Scott DesLauriers". The signature is written in a cursive, flowing style.

Scott DesLauriers  
Deputy Director  
South Dakota Board of Technical Education  
800 Governors Drive  
Pierre, SD 57006  
Scott.DesLauriers@state.sd.us  
(605) 295-7033

**PROGRAM DESCRIPTION**

Institution	Lake Area Technical College
Program Identifier Code (If applicable)	
Program Title	Manufacturing Maintenance Technician Upskill
Program Award Level:	<input type="checkbox"/> Short-Term Certificate <input checked="" type="checkbox"/> Long-Term Certificate <input type="checkbox"/> Diploma <input type="checkbox"/> Associate of Applied Science <input type="checkbox"/> Associate of Applied Science Option
CIP Code (6 Digit)	15.1001
Projected Implementation Date	8/26/2024
Approved Parent Program Title (If applicable)	Energy Technology/Energy Operations
Approved Parent Program Identifier Code (If applicable)	
Location	<input checked="" type="checkbox"/> Main Campus <input checked="" type="checkbox"/> Other: Blended

**SUMMARY**

Type of Non-Substantive Change	<input checked="" type="checkbox"/> Program created using subset of existing courses (B.1.1) <input type="checkbox"/> Creation of associate of applied science option (B.1.2) <input type="checkbox"/> Consolidation of existing programs (B.1.3) <input type="checkbox"/> Program award level change (B.1.4) <input type="checkbox"/> Other:
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Describe the change the institution is seeking approval of.

Lake Area Technical College is seeking approval to offer a 17-credit Certificate option in Manufacturing Maintenance Technician within the existing Energy Technology program. The certificate combines existing coursework from the LATC Energy Technology, Energy Operations, and Robotics AAS programs. The combination of coursework provides foundational skills for employment in manufacturing facilities, including essential safety skills, to keep machines and structures in good operating condition. The 23-county area in South Dakota around Watertown have a higher-than-average concentration of manufacturing maintenance technicians and the profession is expected to explode in the coming 10 years. 306 new positions are expected in South Dakota by 2034, an expected increase of 20%. 214 of those 306 new positions are expected in the Watertown region. Entry level wages are approximately \$47,500 in the region; average earnings are nearly \$55,000 annually.

## CRITERION 2: DEMAND

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The program leads to meaningful employment, adequate student enrollment, and/or fulfills needs not being met by existing education and training providers.

- 2.1. The program leads to high-wage occupations that have an average/mean wage greater than the median wage across all occupations.
- 2.2. The program leads to high-demand occupations that have project annual openings (a measure of demand for workers) greater than the average across all occupations or is shown as an economic and/or labor market emerging field for the state of South Dakota and its regions.
- 2.3. The program's student enrollment is adequate to justify program existence.
- 2.4. The program fulfills a demand not being met by existing education and training providers in the region and/or state.

2.1. Describe the wage projections for occupations associated with the proposed program by completing Appendix 2.A.

2.2. Describe the demand projections for occupations associated with the proposed program.

A. Complete Appendix 2.A.

B. If an emerging field for the state of South Dakota, describe the field. Letter(s) of support, detailing demand, should be attached as appendices.

This is not an emerging field.

2.3. Describe projected student enrollment for the proposed program by completing Appendix 2.B.

2.4. Describe how the proposed program fulfills a demand not being met by existing education and training providers in the region and/or state.

A. Identify closely related program(s) that currently exist at other public higher education institutions in the system or state. If none, write "None."

This certificate would help fill entry-level technician and operator positions in manufacturing facilities; whereas, other related programs in the state are filling the need for upper-level technician positions.

Southeast Technical College offers a 65-credit Associate Degree in Mechatronics with a four-year average of 31 students enrolled. The program requires enrollment for two years.

Mitchell Technical College offers an 81-credit Associate Degree in Automation Controls/SCADA with a four-year average of 33 students enrolled. It is a 2-year program.

Mitchell Technical College also offers a 69.5-credit Associate Degree in Automation Engineering Technology with a four-year average of 4 students. It is a 2-year program.

B. If applicable: Describe the ways in which the demand is not currently being met by the aforementioned program(s) and provide justification as to why the program should be approved by addressing the following conditions that warrant duplication ([BP 303.2](#)). Select all that apply.

Unmet Demand (C.5.1.1)  
 Industry Partnership (C.5.1.2)

Increases Student Access (C.5.1.3)  
 Other:

I. For each condition selected above, provide a brief justification.

According to the U.S. Bureau of Labor and Statistics, there will be a 23% increase from 2020-2030 in South Dakota for Mechanical Engineering Technologist and Technicians. This certificate will fulfill the need within South Dakota with only 9-months of training. Industry partners of Lake Area Technical College's manufacturing programs consistently request graduates with the ability to troubleshoot and maintain machinery and equipment. The certificate offers a quick-to-market option for students and employers, while complimenting the more advanced AAS programs in Energy and Robotics.

### CRITERION 3: DESIGN

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The program's learning assessment strategy, program of study, and delivery methods are designed to provide students with the necessary competencies, as demonstrated through program learning outcomes.

- 3.1. The program is aligned to competencies, as demonstrated through program learning outcomes, that are developed with and continually validated by relevant stakeholders.
- 3.2. The program has a learning assessment strategy to validate student mastery of the program learning outcomes.
- 3.3. The program has an integrated program of study designed to develop and reinforce the program learning outcomes.
- 3.4. The program, when appropriate, includes a work-based learning component that develops and reinforces the program learning outcomes.
- 3.5. The program, when appropriate, offers flexible delivery methods to increase student access.

3.0. Describe the proposed program's alignment with the program award level requirements established in [BP 301.1](#).

A. Does the program align with the requirements?

- Yes  
 No (Requesting Exemption)

B. If no: Provide a detailed rationale for program exemption. Specify which requirement(s) in BP 301.1 are not met; cite specific policy sections (e.g., B.3.4), when appropriate. If external organizations are involved (accreditation, regulatory, licensure, etc.), reference the organization name(s), specific requirements (including citations), and a justification for why the exemption should be approved.

3.1. Describe the program learning outcomes.

A. Provide a list of program learning outcomes for each proposed award level. Learning outcomes should be specific to the program.

**Manufacturing Maintenance Technician Certificate:**

1. Use test equipment effectively.
2. Troubleshoot circuits based on schematics and symbols.
3. Interpret mechanical drawings.

B. Describe the how the program learning outcomes were developed and validated.

The learning outcomes were developed through the help of program advisory boards as key components to develop a superior technician.

3.2. Describe the program's learning assessment strategy.

A. Describe how students will demonstrate mastery of the program learning outcomes. Description should be specific to the program's learning assessment plan vs. the institutional assessment plan.

There are evaluations in the form of quizzes and tests to ensure students understand the material. The students must also do lab tests, timed circuit building, and troubleshooting tests to demonstrate the hands-on skills needed in this field.

B. Is the program preparation for a professional licensure and/or certification examination?

- Yes (Detail in Appendix 4: Section 3)  
 No

3.3. Describe the program of study by completing Appendix 3.

3.4. Describe the program's work-based learning component.

A. Does the program have a work-based learning component? If so, select all that apply.

- |   |                                   |
|---|-----------------------------------|
| <input checked="" type="checkbox"/> None          | <input type="checkbox"/> Clinical |
| <input type="checkbox"/> Apprenticeship           | <input type="checkbox"/> Capstone |
| <input type="checkbox"/> Internship or Externship | <input type="checkbox"/> Other:   |

B. If none, describe why.

The students would need to know these foundational skills before attempting to work in the industry.

3.5. Describe the program's delivery methods.

A. Select the program's primary delivery method(s)<sup>1</sup>. Select all that apply.

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> On Campus | <input type="checkbox"/> Apprenticeship |
| <input type="checkbox"/> Online               | <input type="checkbox"/> Other:         |
| <input checked="" type="checkbox"/> Blended   |   |

B. Describe how flexible delivery methods are being leveraged to increase student access.

Currently, LATC has 14 programs that provide the flexibility of an E-degree or blended delivery method. Blended programs are completed through a combination of online courses with on-campus labs for crucial hands-on training. Weekend labs are available for students to utilize as well as a dedicated space for online students to use during weekday hours. It is LATC's goal to keep required on-campus time to a minimum for students, thus making the blended program as accessible as possible to distance learners.

By offering the Manufacturing Maintenance Technician Upskill as a blended option with the requirement of attending on-campus labs, it would allow a greater number of students the flexibility to obtain the program certificate.

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<sup>1</sup> **In Person:** 100 percent of courses are available in-person. **Online:** 100 percent of courses are available via distance learning. Delivery is only via the Internet. **Blended:** Delivery includes a required combination of both in-person and online courses. If a student has the option to take courses online, but is not required to do so, the program is not necessarily considered blended.

#### CRITERION 4: ALIGNMENT

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The program is vertically aligned to an education and training pathway.

- 4.1. The program is vertically aligned to an education and training pathway, reflecting efficient articulation of:
  - 4.1.1. Non-degree credential/industry certification
  - 4.1.2. Certificate to diploma
  - 4.1.3. Diploma to associate of applied science
  - 4.1.4. Associate of applied science to baccalaureate

4.1. Describe the alignment of the proposed program along an education and training pathway.

A. Complete Appendix 4.

B. Describe the projected alignment between the proposed program and existing academic programs within the technical college system.

The Manufacturing Maintenance Technician Certificate would align with LATC's Energy Technology (ET) and Energy Operations (EO) A.A.S Degrees. Fourteen credits of the certificate program apply to both the ET and EO programs. Three credits in the proposed certificate are in the Robotics and the Electronic Systems Technology programs. If students would like to further their education, the certificate is designed to help them accelerate through the full AAS program options.

C. As applicable: Insert any additional comments here.

**SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION**  
**Appendix 2.A: Labor Market Information**

Lake Area Technical College  
 Manufacturing Maintenance Technician Certificate

SOUTH DAKOTA								
SOC* CODE	SOC* TITLE	AVERAGE ANNUAL OPENINGS	2020 EMPLOYMENT	2030 EMPLOYMENT	NUMERIC CHANGE: 2020-2030	PERCENT CHANGE: 2020-2030	MEDIAN: ANNUAL WAGE (2022)	AVERAGE: ANNUAL WAGE (2022)
00-0000	Total, All Occupations	62,664	491,588	526,251	34,663	7.1	\$36,823	\$44,961
49-9041	Industrial Machinery Mechanics - SD DLR (2023-25 occupational employment projections)	136	1,236	1,312	76	6.20%	not listed	not listed
49-9041	Industrial Machinery Mechanics - SD DLR (2020-30 occupational projections)	142	1119	1452	333	30%	\$50,830	\$ 54,820.00
49-9041	Industrial Machinery Mechanics - Lightcast Analytics - South Dakota (2024-2034)	not listed	1528	1834	306	20%	not listed	not listed
49-9041	Industrial Machinery Mechanics - Lightcast Analytics - SD 23-Counties Around Watertown (2024-2034)	not listed	1112	1327	214	19.30%	\$ 52,463.00	not listed
49-9041	Industrial Machinery Mechanics - O*NET OnLine	140	1120	1450	330	29.46%	\$ 50,830.00	not listed
NATIONAL								
SOC* CODE	SOC* TITLE	AVERAGE ANNUAL OPENINGS	2022 EMPLOYMENT	2032 EMPLOYMENT	NUMERIC CHANGE: 2022-2032	PERCENT CHANGE: 2022-2032	MEDIAN: ANNUAL WAGE (2022)	AVERAGE: ANNUAL WAGE (2022)
49-9041	Industrial Machinery Mechanics - Lightcast Analytics - Nation (2024-2034)		850	941	91	11%	\$58,995	not listed
49-9041	Industrial Machinery Mechanics - O*NET	39200	402200	462100	59900	15%	\$59,830	not listed

**SOURCE:** South Dakota Department of Labor and Regulation, Labor Market Information Center (LMIC) (<https://dlr.sd.gov/lmic/>) [https://dlr.sd.gov/lmic/menu\\_projections\\_occupation\\_statewide.aspx](https://dlr.sd.gov/lmic/menu_projections_occupation_statewide.aspx)  
**DATE:** 02/08/2024

**NOTES:**

**SOURCE:** Lightcast  
**DATE:** 03/14/2024  
 analyst.lightcast.io/analyst

**NOTES:** Lightcast data represents the national average adjusted for regional size comparable to Watertown, SD.

**SOURCE:** O\*NET  
**DATE:** 02/13/2024  
<https://www.onetonline.org/link/summary/17-3027.00>

**NOTES:**



**SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION**

**Appendix 2.B: Student Demand Projections**

Lake Area Technical College

Manufacturing Maintenance Technician Certificate

	<b>YEAR 1</b>	<b>YEAR 2</b>	<b>YEAR 3</b>
<b>Student Full-Time Equivalent (FTE)</b>	<b>2</b>	<b>3</b>	<b>5</b>
Headcount: Full-Time			
Headcount: Part-Time	3	6	9
<b>Headcount: Total</b>	<b>3</b>	<b>6</b>	<b>9</b>
<b>Total Program or Site Capacity</b>	<b>3</b>	<b>6</b>	<b>9</b>

**SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION**

**Appendix 3: Program of Study**

Lake Area Technical College

Manufacturing Maintenance Technician Certificate

<b>MONTHS:</b>	9
<b>SEMESTERS:</b>	2
<b>TOTAL CREDITS:</b>	17

<b>PREFIX AND NUMBER</b>	<b>TITLE</b>	<b>CREDITS</b>	<b>DESCRIPTION</b>	<b>EXISTING COURSE</b>
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**I. GENERAL EDUCATION CORE**

AED 100	Automated External Defibrillator	0.5	To prepare individuals in the workplace to provide care for breathing emergencies, perform cardiopulmonary resuscitation (CPR) and use an automated external defibrillator (AED) for victims of sudden cardiac arrest.	Y
HAZ 100	Hazardous Materials Safety	0.5	This course covers hazard communication and identifies workplace safety procedures, blood-borne pathogens, and describes fire and disaster procedures.	Y
<b>SUBTOTAL OF GENERAL EDUCATION CREDITS:</b>		<b>1</b>	<b>TOTAL NEW COURSES:</b>	<b>0</b>

**II. PROGRAM CORE**

ET 105	OSHA/Safety, Torque Certifications, Valves, and Lifts	2	This course will cover OSHA laws, rules and regulations for the industrial construction industry, torque certifications, valves, and lifts. Possible hazards in the work place are also covered. Students will practice preventive measures that can be taken to ensure their safety, and the safety of others.	Y
ET 150	Mechanical Drives and Pumps	3	This course will enable students to understand the safety procedures, components, and applications of mechanical drives and pump systems.	Y
WLD 230	Structural Material Welding	2	Students will learn the basic fundamentals of stick welding and practice hands-on skills.	Y
RBTC 200	Mechanical Design and 3D Modeling A	2	will enter into the world of manufacturing. Emphasis is placed in the areas of orthographic views, isometric views and detailed and assembly prints. Engineering and Technical Designing using Autodesk Inventor will be introduced.	Y
RBTC 203	Mechanical Design and 3D Modeling B	1	This course will cover print reading skills for individuals who will enter into the world of manufacturing. Emphasis is placed in the areas of orthographic views, isometric views and detailed and assembly prints. Engineering and Technical Designing using Autodesk Inventor will be introduced.	Y
EO 103	Fundamentals of Maintenance Operations	3	A basic introduction to the field of maintenance operations.	Y
ET 185	Fluid Power	3	This course will enable students to understand the components, applications and physical properties of hydraulic and pneumatic systems.	Y
<b>SUBTOTAL OF PROGRAM CREDITS:</b>		<b>16</b>	<b>TOTAL NEW COURSES:</b>	<b>0</b>

**SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION**  
**Appendix 4: Alignment Projection**

Lake Area Technical College  
 Manufacturing Maintenance Technician Certificate

**TOTAL CREDITS IN PROPOSED PROGRAM:**

17

<b>I. STACKABLE OPPORTUNITIES</b>							
<b>PROGRAM NAME</b>							
Energy Technology		Short-term Certificate	X	Existing Forthcoming	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?
		Long-term Certificate					
		Diploma					
	X	AAS				71.5	14
Energy Operations		Short-term Certificate	X	Existing Forthcoming	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?
		Long-term Certificate					
		Diploma					
	X	AAS				73.5	14
Robotics		Short-term Certificate	x	Existing Forthcoming	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?
		Long-term Certificate					
		Diploma					
	x	AAS				72	3
Electronic Systems Technology		Short-term Certificate	x	Existing Forthcoming	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?
		Long-term Certificate					
		Diploma					
	x	AAS				72	3

<b>II. ARTICULATION AGREEMENTS (BACCALAUREATE)</b>							
<b>PROGRAM NAME</b>	<b>COLLEGE OR UNIVERSITY</b>						
				Existing Forthcoming	If Forthcoming: Projected Timeline	Total Credits in Bachelor's Degree	How many PROPOSED PROGRAM credits are projected to be accepted in the articulation agreement?
				Existing Forthcoming	If Forthcoming: Projected Timeline	Total Credits in Bachelor's Degree	How many PROPOSED PROGRAM credits are projected to be accepted in the articulation agreement?
				Existing Forthcoming	If Forthcoming: Projected Timeline	Total Credits in Bachelor's Degree	How many PROPOSED PROGRAM credits are projected to be accepted in the articulation agreement?

<b>III. LICENSURE AND CERTIFICATION OPPORTUNITIES</b>		
<i>The PROPOSED PROGRAM will qualify students to pursue the following licensure and/or certification opportunities:</i>		
<b>LICENSURE/CERTIFICATION</b>	<b>OVERSIGHT ORGANIZATION</b>	Will the licensure/certification require reporting per SDCL 13-1-61?