



South Dakota Board of
Technical Education

May 25, 2022

Mitchell Technical College
1800 E Spruce St
Mitchell, SD 57301

**RE: South Dakota Board of Technical Education Approval of:
Non-Substantive Program Application
Certificate in Welding**

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
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South Dakota Board of Technical Education
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Pierre, SD 57006
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PROGRAM DESCRIPTION

Institution	Mitchell Technical College
Program Identifier Code (If applicable)	15.0614
Program Title	Welding
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)	15.0614
Projected Implementation Date	8/1/2022
Approved Parent Program Title (If applicable)	Welding and Manufacturing
Approved Parent Program Identifier Code (If applicable)	15.0614
Location	<input checked="" type="checkbox"/> Main Campus <input type="checkbox"/> Other:

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.

Mitchell Technical College is requesting the addition of a long-term welding certificate to strengthen the existing Welding and Manufacturing program. According to data on careerexplorer.com, 55% of welders have a certificate or an associate degree. Certifications awarded by the American Welding Society (AWS) are accepted as industry standard and students in the current program earn the CERT 330- AWS Safety certification during the first nine months of study.

Of students who began the Welding and Manufacturing program in 2015 or later, MTC had 193 total student who exited the program. Of the 193 who exited the program, 108 or 56% were graduates.

Of the 85 non-completers, 62 or 73% had F or W grades in one or more general education courses. Overall, these 85 non-completers had a 33% pass rate on general education courses. The pass rate for all courses, however, was 60% and the pass rate for welding courses was 71%.

By eliminating the general education requirement, an additional 60 students would have most likely earned credentials that support industry requirements.

CRITERION 2: DEMAND

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.

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."

All four technical colleges have existing welding programs that provide diploma and/or AAS options.

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:

For each condition selected above, provide a brief justification.

Mitchell Technical College is seeking approval for a certificate option to meet attainment goals set by the state. The goal is not to add more students to the program, rather, to increase completion rates. The non-completers from the past five years are employed without credentials.

CRITERION 3: DESIGN

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.

Apply principles of safety in welding, cutting, and machine operation.

Use welding symbols, blueprints, and manufacturing measuring devices in various lab and classroom scenarios.

Describe metallurgy and mechanical/electrical requirements.

Complete various AWS code welder qualification weld tests.

Apply the use of welding economics and variables.

Interpret welding code.

Utilize nondestructive methods (x-ray, ultrasound, magnetic particle, and penetrant) to examine welds for quality.

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

The learning outcomes have been in place for ten years. They were originally written by the program director, program instructors, and vice president for academics. An annual review of all learning outcomes is done and reviewed at the industry advisory board meeting. The program continues to provide current training in safety, blueprint reading, various welding processes and material selection.

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.

Students are required to think as in a step-by-step scenario of a project on a controller. This creates a higher-level of learning due to the critical thinking needed to finish assignments.

Students will demonstrate Machine set-up, perform tests over specific welding processes, and explain the allotropy of carbon along with lattice structures.

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 certificate provides basic training in welding. If the student wishes to continue, there is an internship opportunity between the completion of the certificate and start of the AAS degree option.

3.5. Describe the program's delivery methods.

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

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

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

Hands-on, in-lab instruction is best suited for welding. The training is designed for a combination of hands-on welding experience and classroom theory. The use of learning modules, presentations, safety strategies and experiential learning opportunities provides greater learner involvement, encourages problem solving and critical thinking skills, and improves retention.

¹ **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

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 certificate option is a great jumpstart to further educational opportunities in welding and manufacturing. Certificate earners can return to Mitchell Technical College and earn an Associate of Applied Science degree in Progressive Welding or in Machining and Manufacturing. Other technical colleges within the BOTE system have the same opportunity to accept certificate earners into a similar AAS program.

C. As applicable: Insert any additional comments here.

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

Mitchell Technical College
 Welding Certificate

SOUTH DAKOTA								
SOC* CODE	SOC* TITLE	AVERAGE ANNUAL OPENINGS	2018 EMPLOYMENT	2028 EMPLOYMENT	NUMERIC CHANGE: 2018-2028	PERCENT CHANGE: 2018-2028	MEDIAN: ANNUAL WAGE (2020)	AVERAGE: ANNUAL WAGE (2020)
00-0000	Total, All Occupations	62,664	491,588	526,251	34,663	7.1	\$36,823	\$44,961
51-4121	Welders, cutters, solderers, and brazers	432	3,321	3,758	437	13.2	\$ 39,813.00	\$ 40,874.00

NATIONAL								
SOC* CODE	SOC* TITLE	AVERAGE ANNUAL OPENINGS	2019 EMPLOYMENT	2029 EMPLOYMENT	NUMERIC CHANGE: 2019-2029	PERCENT CHANGE: 2019-2029	MEDIAN: ANNUAL WAGE (2020)	AVERAGE: ANNUAL WAGE (2020)
51-4121	Welders, cutters, solderers, and brazers	49,200	418,200	452,400	34,100	8	\$ 44,190.00	\$ 44,190.00

SOURCE: South Dakota Department of Labor and Regulation, Labor Market Information Center (LMIC) (<https://dlr.sd.gov/lmic/>)
DATE: 3.10.2022

SOURCE: <https://www.bls.gov/ooh/production/welders-cutters-solderers-and-brazers.htm>
DATE: 3.10.2022

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION

Appendix 2.B: Student Demand Projections

Mitchell Technical College

Welding Certificate

	YEAR 1	YEAR 2	YEAR 3
Student Full-Time Equivalent (FTE)	10	10	10
Headcount: Full-Time	10	10	10
Headcount: Part-Time			
Headcount: Total	10	10	10
Total Program or Site Capacity	50	50	50

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
Appendix 3: Program of Study

Mitchell Technical College
Welding Certificate

MONTHS:	9
SEMESTERS:	2
TOTAL CREDITS:	19

PREFIX AND NUMBER	TITLE	CREDITS	DESCRIPTION	EXISTING COURSE
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I. GENERAL EDUCATION CORE				
None				
SUBTOTAL OF GENERAL EDUCATION CREDITS:		0	TOTAL NEW COURSES:	0

II. PROGRAM CORE				
WLD 101	Welding Safety and Discontinuities	2	The AWS Safety in Welding provides a comprehensive overview of welding hazards, safety equipment. At the completion of the course, participants will have the opportunity to sit for a certification exam. Students will also be introduced to discontinuities AND defects that go hand in hand with the welding processes. They will be able to correctly place the discontinuity or defect into precise categories.	Y
WMT 149	Basic Welding Lab	2	Proper skills to operate all shop equipment and produce quality welds in order to pass specific weld position tests. Some of the assignments will include: Lab safety; applying proper technique with GMAW processes; manipulate hand held plasma equipment in a skillful assignment; demonstrate the ability to properly operate an oxy-fuel cutting torch.	Y
WMT 150	Welding Lab I	4	Student will gain the proper skills to operate all shop equipment and produce quality welds in order to pass specific weld position tests. Some of the assignments will include: working on a class room project; applying proper technique with GMAW, GTAW and GMAW-P to properly pass an AWS qualification exam.	Y
OSHA 100	OSHA 10 Training	1	An overview of OSHA (Occupational Safety and Health Administration) standards focusing on hazard recognition and injury and illness prevention. The 10-hour general program is intended to provide entry-level workers with awareness of hazards in and around the work site. Emphasis is placed on recognition and prevention and helps create a culture of safety. Upon successful completion the student will receive OSHA 10 certification.	Y
WMT 117	Crane and Forklift Operation	2	The class covers basic safety principles related to Crane and Forklift activities. The application and inspection of cable, chain, and synthetic lifting devices will be covered along with verbal and non-verbal signals involved in safe operations. Students will gain experience in reading load charts, identifying working parts of a crane, operation of overhead bridge cranes and learn how to inspect cranes prior to use.	Y
WMT 120	Manuf. Symbols and Measurements	1	Exercise the ability of micrometer use, reading of fraction/metric tape measure, applying the use of a fillet weld gauge, operating dial indicators, dial calipers, identifying weld symbols, analyzing welding symbols on weld drawings and demonstrating actual welding scenarios with a comprehensive view of welding manufacturing blueprints.	Y

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
Appendix 3: Program of Study

Mitchell Technical College
Welding Certificate

WMT 121	Blueprint Reading	1	Interpretation of blueprints, creation of weld maps, applying weld symbols to corresponding parts, study of current manufacturing blueprints, draw fabricated parts in detail with weld symbols, formulate math problems into created drawing and research blueprints with unknowns.	Y
WMT 142	Welding Economics	2	A close look at welding manufacturing economics with specifics in welding productivity, do's goal, method for computing operation factor, putting it all together and summary of key concepts. Reduce weld metal volume, reduce arc time per weldment, reduce rejects, rework and scrap, reduce work effort, reduce motion and delay time, method for computing operating factor and understanding welding productivity.	Y
WMT 151	Welding Lab II	4	The student will gain the proper skill to operate all shop equipment and produce quality welds on aluminum and steel in order to pass specific weld position tests. Band saw operations, introduction to the basic operations of a forming Iron Worker, demonstrating proper techniques in various positions with GMAW/GTAW/SMAW/GMAW-P process, and fabrication of a classroom project.	Y
SUBTOTAL OF PROGRAM CREDITS:		19	TOTAL NEW COURSES:	0

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
Appendix 4: Alignment Projection

Mitchell Technical College
 Welding Certificate

TOTAL CREDITS IN PROPOSED PROGRAM:
 19

I. STACKABLE OPPORTUNITIES							
PROGRAM NAME							
Welding		Short-term Certificate	X	Existing	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?
		Long-term Certificate		Forthcoming			
	X	Diploma					
		AAS				35	19
Progressive Welding		Short-term Certificate	X	Existing	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?
		Long-term Certificate		Forthcoming			
		Diploma					
	X	AAS				65.5	19
Machining and Manufacturing		Short-term Certificate		Existing	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?
		Long-term Certificate		Forthcoming			
		Diploma					
		AAS				64.5	19
		Short-term Certificate		Existing	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?
		Long-term Certificate		Forthcoming			
		Diploma					
		AAS					

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

III. LICENSURE AND CERTIFICATION OPPORTUNITIES		
<i>The PROPOSED PROGRAM will qualify students to pursue the following licensure and/or certification opportunities:</i>		
LICENSURE/CERTIFICATION	OVERSIGHT ORGANIZATION	Will the licensure/certification require reporting per SDCL 13-1-61?
AWS Welding Safety Certificate	American Welding Society	Yes
OSHA 10 Certification	Occupational Safety and Health Organization	Yes