SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
ACADEMIC AFFAIRS
COMMITTEE RECOMMENDATION

SUMMARY

Lake Area Technical College

Substantive Program Application

Long-Term Certificate

Uncrewed Aerial Systems (Drones) Certificate

COMMITTEE RECOMMENDATION

The Committee on Academic Affairs and Institutional Effectiveness ("Committee") met on 9/17/2024 to consider the merits of the above application. After review, the Committee makes the following action recommendation to the Board of Technical Education:

☒ Approval
☐ Disapproval
☐ Deferral
☐ Other:

PROGRAM DESCRIPTION

Institution	Lake Area Technical College
Program Identifier Code (If applicable)	NA
Program Title	Uncrewed Aerial Systems (Drones) Certificate
Program Award Level: Check all that apply	☐ Short-Term Certificate ☒ Long-Term Certificate ☐ Diploma ☐ Associate of Applied Science
CIP Code (6 Digit)	36.0207 Remote Aircraft Pilot (Personal)
Projected Implementation Date	
Location	☒ Main Campus ☐ Other:

SUMMARY

Type of Substantive Change	☒ New Program (B.1.1) ☐ Significant Curriculum Modification (B.1.2) ☐ Other:

Describe the change the institution is seeking approval of.

Lake Area Technical College (LATC) is seeking approval to start a new long-term certificate program that expands on the offerings in the college's Aviation program. In addition to professional flight and maintenance training, the LATC Uncrewed Aerial Systems (Drones) Certificate will provide students entering a variety of fields the skills and credentials necessary to operate drones in commercial settings for applications such as surveillance, remote sensing, mapping, and inspections.

The primary purpose of the Uncrewed Aerial Systems (Drones) Certificate is to develop a highly trained uncrewed aerial systems workforce to support the use and maintenance of this new technology across industry sectors. The program design will prepare students with the necessary skills to be employed as uncrewed aerial system operators/pilots and technicians. Graduates will learn the laws and ethical procedures for operating Uncrewed Aerials Systems and will have the knowledge and skills to become a Federal Aviation Administration (FAA) Certificated Remote Pilot (Part 107 Remote Pilot Certificate)

Graduates with an Uncrewed Aerial Systems (Drones) Certificate may find employment as an uncrewed aerial operator/pilot and technician in the following industries:

- Agriculture (land survey, environmental monitoring, agronomy research, precision ag applications)
- Aerial Film and Photography (real estate, journalism)
- Aviation (drone pilot, operator, technician)
- Construction, Utilities and Power (surveying, infrastructure maintenance, mining, ground preparation)
- Data Collection, Research and Analysis (government reporting, private industry research)
- Public Safety (search and rescue, surveillance, emergency response)
- Telecommunications (communications, surveying, infrastructure)
- Infrastructure and Transportation (surveying, logistics)
- Military (intelligence, delivery, anti-weaponry)

This certificate may be earned as a stand-alone program award or may be completed to add immense value as a complimentary credential in thirteen existing programs at Lake Area Technical College. Achieving an Uncrewed Aerial Systems (Drones) Certificate will provide cutting edge skills and licenses to enhance dozens of career options for students. Due to the new emerging technology and critically sought skill-sets, students who complete this option will not only increase their job readiness in multiple industries, but also increase their overall earnings in both short- and long-term career selections.

CRITERION 1: MISSION

The program aligns with the system's mission and strategic priorities.

1.1. The program aligns with the system's mission of preparing a technically skilled workforce prepared to serve the state of South Dakota and its regions.
1.2. The program aligns with the system's strategic priorities.

1.1. Describe how the proposed program aligns with the system's mission.

The mission of Lake Area Technical College, as part of the South Dakota Technical College System, is to provide superior, comprehensive technical education that changes lives and launches careers. This proposed 18-credit certificate will open the door to additional career options for students in more than a dozen LATC programs. The certificate provides a value-added pathway into various industries which require uncrewed aerial systems operators and technicians.

Growth in drone use is expected to increase dramatically in the coming years. The Federal Aviation Administration (FAA) has forecasted that the commercial drone fleet (drones operated in connection with a business) will reach 828,000, and that the recreational fleet (drone operated for personal enjoyment) will number around 1.48 million by 2024 (US Government Accountability Office, 2024). It is essential to train the workforce to support growth of uncrewed aerial systems operations and maintenance across various industries in South Dakota, including agriculture, aerial film and photography, aviation, construction, data collection and analysis, public safety, telecommunications, transportation, military and defense operations and services, and others. Businesses use uncrewed aerial systems data for analysis for security, to conduct inspections and surveys, take photos, and many other purposes. The students who earn a Lake Area Technical College Uncrewed Aerial Systems (Drones) Certificate will help meet the fast-growing demand for employees who can operate and maintain uncrewed aircraft systems in our region.

LATC joined a consortium, including the Federal Aviation Administration (FAA), for the implementation of Sections 631 and 632 of the FAA Reauthorization Act of 2018, relating to academic institution engagement in uncrewed aircraft system technology programs. Additionally, Lake Area Tech presently is designated as a UAS Collegiate Training Initiative (CTI) school (Section 632). The program mission is for the FAA to collaborate with partner schools to deliver up-to-date UAS training tools, resources, and guidelines that will prepare students for careers in UAS and continue to maintain the safety of the National Airspace System.

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.

Uncrewed Aerial Systems Operators and Technicians are emerging positions throughout industries in South Dakota, so obtaining traditional labor market projections is challenging. Other entities, however, have begun to make predictions on the needs for drone-related skillsets in the region.

According to the Mercatus Center at George Mason University, in a 50 State Report Card prepared in 2020, South Dakota has 20.0 drone related jobs per 100,000 people, ranking it in the top half of the 50 states. With the present South Dakota population at approximately 910,000, the statistic shows that 182 drone-related employment options existed four years ago. With the growing number of "drone highways" (aerial corridors above public right of way) being established and coordinated with the FAA and state governments, the employment demand has increased exponentially as uncrewed aerial systems applications and services have become an essential part of dozens of South Dakota industries.

Several letters of support from various South Dakota businesses have been attached. These letters outline the demand for new employees trained in uncrewed aerial systems across multiple career pathways.

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."

According to their websites, South Dakota State University offers an Uncrewed Aerial Systems certificate for undergraduate students. Mitchell Technical College includes drone applications within their Precision Ag AAS degree 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.

Industry Partnership:
Adding drone capabilities (Uncrewed Aerial Systems) to any number of industries provides tools for businesses to produce better outcomes, collect precise data, and create more efficient delivery systems. However, and perhaps most importantly, drone technology applications may reduce liability and improve worker safety. Preparing Lake Area Tech students to become uncrewed aerial systems operators and technicians adds immediate employment and wage value.

The pursuit of business data and technological advances have fueled the use of drone applications in commercial and industrial settings. Drone payload technology provides businesses with precise measurements, more accurate financial data, improved communications, and careful project monitoring. It is not surprising that students who have drone certifications, education and licensures are widely sought and much desired in dozens of labor markets. Over the last six years LATC has carefully built numerous partnerships with businesses who have adopted drone technologies. Adding this training and certification to complement the existing LATC Aviation - Professional Fixed-Wing Pilot program (Uncrewed Aerial Systems Pilot Option) will be an invaluable tool for our students to enhance their skill sets and provide them an extremely valuable asset on their resumes.

Lake Area Tech has prepared for an Uncrewed Aerial Systems (Drones) Certificate in several ways. Each summer the college hosts a Drone Camp, open to hundreds of 3rd through 8th grade students. Partnering several local businesses and LATC faculty and Corporate Education team members, this camp presents drone training and applications for pre-collegiate students. The camp both raises awareness of career opportunities and technology to young students and builds their confidence with the highly technical drone landscape. In addition, LATC has offered coursework to incorporate uncrewed aerial systems components into our offerings over the last several years. In Fall 2023 Lake Area Tech began offering FLT 102 Introduction to Unmanned Aerial Systems and FLT 132 Advanced Unmanned Aerial Systems dual credit courses. LATC also offers UAS Introduction to GIS and FLT 105 Aviation Meteorology for our Aviation and Agriculture program students. Finally, in Spring 2024 the college launched a weekly Drone Club for LATC students to focus on both career enhancement and affordable recreational drone operations.

The following list includes our present Uncrewed Aerial Systems business partnerships:

	Industry Partner	Specialty	Contacts/Advisory Board Members
1.	National Grid Renewables	Energy	Marcus Sattler Alex Hughes Ty Lerew Ethan Allen
2.	Codington Co. Sheriff's Depart.	Law Enforcement	Brent Solum
3.	Terra Plex Ag	Agriculture	Jake DeJong
4.	Aviation	Technical Design	Greg Klein
5.	Codington Co. Search & Rescue	Emergency Management	Andrew Delgado
6.	Black Hills Special Services	Education	Rebecca Myers
7.	Aviation	Technical Design	Jerry Robbins
8.	Elite Unmanned	Equipment and Hardware	Mike Klarenbeck

Unmet Need:
Due to the nature of this emerging industry, the Bureau of Labor Statistics on the occupation associated with CIP Code 36. 0202 – Remote Aircraft Pilot (Personal) is unavailable at this time. However, as official labor statistics are vital to the creation or expansion of collegiate drone programs, a new USA CTI-Occupational-Workgroup (COW) consisting of representatives from governmental agencies, industry, and academia was formed to develop a public comment response, requesting Congress to create a new occupation called Commercial Uncrewed Aircraft Operators. Submitting public comments is the first step in requesting a new occupation to be created in the Federal Government's Standard Occupational Classification (SOC) system. The Bureau of Labor Statistics and other agencies are mandated by Congress to collect and report labor statistics for occupations (and only occupations) in the SOC system. For the past 1.5 years, the COW workgroup has met regularly to develop public comments based on the requirements outlined in the Federal Register notice. The final public comment period ended August 8, 2024. As the opportunity to request a new occupation to be created in the SOC system only takes place every ten years (the last revision occurred in 2018), this request will provide valuable labor data in the future about the Commercial Uncrewed Aircraft Operators occupation.

Nonetheless, employment data for industries which are expecting drone training, expertise and licenses in many of their future employees is extensive and reveals a rapidly expanding need for uncrewed aerial systems certifications.
According to the Labor Market Information Center, South Dakota Hot Careers, High Demand, High Wage Occupations 2024 data, the following Soc Code Careers and Titles show the average annual openings and average annual wages in the following occupations which include drone applications and usages:

	SOC Code	SOC Title	Ave. Annual Openings in SD	Ave. Annual Wage 2023
1.	45-2091	Agriculture Equipment Operators	238	$45,300
2.	47-2031	Carpenters	595	$44,550
3.	17-2051	Civil Engineers	101	$90,870
4.	51-9124	Painting, Spraying Machine Operators	154	$46,650
5.	33-3012	Correctional Officers	126	$50,500
6.	49-3041	Farm Equipment Service Techs	143	$62,150
7.	11-9013	Farmers and Ranchers Managers	2415	$99,990
8.	47-1011	Construction and Extraction Mangers	228	$72,030
9.	53-1047	Transportation & Material Moving Managers	163	$65,280
10.	47-4051	Highway Maintenance Workers	199	$45,600
11.	51-9061	Inspectors, Testers, Sorters	119	$44,840
12.	37-3012	Pesticide Handlers, Applicators	110	$44,450
13.	33-3051	Police & Sheriff Patrol Officers	158	$58,900
14.	11-9141	Property, Real Estate Managers	148	$51,620
15.	15-1252	Software Developers	167	$94,500
16.	51-8031	Water/Waste Treatment Plant Operators	86	$54,180

Total Annual SD Openings: 5150

Average Annual SD Wage: $60,713

Another comparison table and market research from DroneU.com lists further employment data and opportunities:

Unmanned Aerial Vehicle Pilot or Drone Pilot—according to DroneU.com (2024)
Salary ranges from 61K-100K

Industry	Average Drone Pilot Salary
Aerospace and Defense	$155, 320
Construction	$79,368
Environmental Services	$83,856
Mapping and Surveying	$95,966
Real Estate	$84,459
Transportation	$85,715
All Other Industries	$89,264

Film and Video	$69,107

*Average Drone Salary based upon specific fields of study.

The data clearly shows that thousands of South Dakota jobs with excellent wages are available for employees within businesses and industries which list the Uncrewed Aerial System Operator and Technician training and licensing as a greatly desired and valued employment skill set.

Increases Student Access:
Currently, two of Lake Area Technical College's Uncrewed Aerial Systems courses are offered for dual credit at the discounted state rate. These courses are taught in a blended format with the major content components taught online, while drone flying applications are instructed as lab courses offered at various high schools. This allows the students a very affordable and home-campus site option to earn at least six college credits. Further, upon completion of the Uncrewed Aerial System Certificate, students will earn their Recreational TRUST (UAS Safety Test) Certificate and Commercial Part 107. As our Uncrewed Aerial Systems instructors all have earned their Recreational TRUST (UAS Safety Test) Certificates, they can administer this test at no cost to their students in order to receive this license. As a third party certification, the Commercial Part 107 exam is an $175 out-of-pocket expense for the students, which they may take at the LATC Testing Center upon completion of course requirements.

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.

Learning Outcome 1: UAS Regulations and Safety Standards:
Develop in-depth knowledge of FAA regulations, operational limits, and safety standards essential for the responsible and legal operation of uncrewed aerial systems (UAS), including environmental impacts and privacy concerns.

Learning Outcome 2: UAS Technology and Operations:
Gain practical skills in UAS flight operations, maintenance, and troubleshooting. Apply basic aeronautical principles and technical knowledge to ensure effective, proficient, and safe UAS operation in real-world scenarios.

Learning Outcome 3: Remote Sensing and Data Analysis:
Acquire advanced knowledge and hands-on experience with remote sensing technologies, including radar, LiDAR, multispectral, hyperspectral, and infrared imaging. Interpret and analyze data collected from various remote sensing platforms for informed decision-making.

Learning Outcome 4: UAS Design, Construction, and Application:
Understand the engineering principles and technical specifications required to design, construct, and integrate UAS components. Develop practical skills in materials selection, fabrication techniques, and assembly procedures. Apply UAS technology in multiple industries and diverse fields such as agriculture, urban planning, environmental monitoring, and construction by creating high-resolution maps, 3D models, and conducting spatial analyses.

Learning Outcome 5: UAS/UAV Industry:
Gain comprehensive technical knowledge and hands-on skills in drone operations, mapping software, weather and meteorology, airport and FAA terminology, radio communication, and geo-spatial/GIS tools. Prepare for employment by mastering drone photogrammetry, aerial data collection, 3D modeling, and utilizing industry-standard mapping and media editing software for quality control and analysis.

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

The program learning outcomes were developed through six years of extensive industry and higher education research to ensure they include the necessary job skills and knowledge required by Uncrewed Aerial Systems Operators and Technicians. LATC educators and Business Partner Specialists designed, implemented, and revised course syllabi and outcomes as the initial classes were added to several programs of study. Further, multiple state-wide businesses and educational partners guided the development of the final program learning outcomes. After the first year of the certificate program, the program learning outcomes will be revised, if necessary, by the Advisory Board to ensure all outcomes remain appropriate and relevant.

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 will demonstrate mastery of student learning outcomes through a variety of formative and summative assessments. These will include course exams and demonstration of skills through competency and licensure checklists. Post-graduation surveys conducted by employers and LATC's placement report also help to determine the success of the program's graduates.

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.

☒ None
☐ Apprenticeship
☐ Internship or Externship
☐ Clinical
☐ Capstone
☐ Other:

B. If none, describe why.

At present, the certificate will not require a work-based learning component included in the curriculum. However, much of the knowledge and skill-based applications gained through the certificate are employment "tools" sought by industry partners. However, the added value of the certificate will help students become more competitive in gaining much desired internships through numerous LATC programs which closely align with the Uncrewed Aerial Systems training pathway.

3.5. Describe the program's delivery methods.

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

☒ On Campus
☒ Online
☒ Blended
☐ Apprenticeship
☐ Other:

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

Currently, two of Lake Area Technical College's Uncrewed Aerial Systems courses are offered for dual credit to high school students. These courses are taught in a blended format with the major content components taught online, while drone flying applications are instructed as lab courses offered at various high schools. This allows the students a very affordable and home-campus site option to earn at least six college credits. Also, two additional courses listed in the certificate curriculum have been previously offered as on-campus options for both Aviation and Agriculture program students. Due to the blended and online delivery of the certificate courses, not only will traditional and Dual Credit students have increased access to the curriculum, but also non-traditional or full-time employees will be able to gain the credits and skills of this additional tool to enhance their resumes or provide extra preparation for many expanding industry employment expectations. Further, upon completion of the Uncrewed Aerial System Certificate, students will earn their Recreational TRUST (UAS Safety Test) Certificate and Commercial Part 107 licensure.

[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 LATC Uncrewed Aerial Systems (Drones) Certificate includes several classes that are also included in the Aviation and Agriculture curriculums. More importantly, this certificate will greatly enhance credentials and provide expertise in high demand industry skills in all of the following LATC programs: Heavy Equipment Operator, Law Enforcement, Energy Operations, Energy Technician, Building Trades Technology, Natural Resources Management, Computer Information Systems, Robotics, Med Fire Rescue, Photography, Aviation Maintenance Technology, Aviation – Professional Fixed-Wing Pilot, and Agriculture. Earning this certificate will help LATC students gain proficiency in operating a cutting-edge tool which has become an essential component in dozens of commercial enterprises.

C. As applicable: Insert any additional comments here.

CRITERION 5: CAPACITY

The institution demonstrates the internal and external resources necessary to develop, implement, and sustain the program.

5.1. The institution demonstrates the financial resources necessary to develop, implement, and sustain the program.
5.2. The institution demonstrates appropriately certified and qualified faculty are in place with expertise in content, pedagogy, and related industry to develop and validate the program learning outcomes.
5.3. The institution's physical facilities (e.g., classrooms, laboratories) reflect current industry and/or occupational standards necessary to develop and validate the program learning outcomes.
5.4. The institution's equipment and technology resources reflect current industry and/or occupational standards necessary to develop and validate the program learning outcomes.
5.5. The institution demonstrates the ability of the program to meet institutional and programmatic accreditation standards, as applicable.

5.1. Describe the institution's financial capacity to develop, implement, and sustain the proposed program.

A. Complete Appendix 5.

B. Describe the proposed program's anticipated local fee structure. Description of fee structure should be specific to the program.

18 credit UAS (Drones) Certificate Cost

	Cost/credit	# Credits	Total Cost
Tuition	124.00	18	2,232.00
State Facility Fee	36.00	18	648.00
Department Fee			425.00
Campus Support Fee	15.00	18	270.00
State & Local M&R Fee	7.00	18	126.00
Online Support Fee	47.00	6	282.00
TOTAL			**$3983.00**

*Students will also purchase textbooks/course binder and required safety items.

C. What is the proposed program weight factor (funding formula)?

☒ Standard Cost (1)
☐ High Cost (3)
☐ High Cost, Low Density (5)

I. Provide rationale related to the selection of proposed program weight factor.

All of LATC's Aviation program options have a "3" weighted factor for state aid distribution due to the cost of equipment, fuel, and supplies to operate the programs. The Uncrewed Aerial Systems (Drone) Certificate operational costs won't be as extensive; LATC proposes a Standard Cost "1" assignment to the Certificate option.

D. Describe the contingency plans in case anticipated enrollments, income, or resources do not materialize.

Since the Lake Area Tech Uncrewed Aerial Systems (Drones) Certificate and Aviation programs are fully staffed and funded, if student numbers for the certificate are lower than expected, we do not anticipate any staff reductions. Should the certificate not materialize, it could be terminated with minimal financial loss to LATC.

5.2. Describe how the institution will ensure the appropriate certified and qualified faculty are in place with the expertise in content, pedagogy, and the related industry to develop and validate the program learning outcomes.

A. Describe the necessary qualifications of faculty who will be involved in the program.

The three highly trained and experienced educators and Business Partner Specialists who have designed the curriculum for the Uncrewed Aerial Systems (Drones) Certificate hold the following credentials:

1. Master's in Degree in Geospatial Sciences
2. AAS Degree in Building Trades with Military Service
3. Bachelor's Degree in Marketing

All three have earned their Recreational TRUST (UAS Safety Test) Certificate and Commercial Part 107 licenses.

B. Does the instructorship(s) currently exist in the roster of Instructor Salary Support market value determinations?

☒ Yes
☐ No

I. If no: Describe the SOC(s) codes and titles that will need to be added.

5.3. Describe the existing and/or new physical facilities that will be utilized or needed to reflect current industry and/or occupational standards. Outline short- and long-term investments in physical facilities.

At this time, no additional LATC facilities are needed or required to meet the expectations of the Uncrewed Aerial Systems (Drones) Certificate curriculum. However, if student numbers in the certificate grow from the estimated cohort sizes, it may be necessary to find space to lease or repurpose Lake Area Tech facilities for the certificate program.

5.4. Describe the existing and/or new equipment and technology resources that will be utilized or needed to reflect current industry and/or occupational standards. Outline short- and long-term investments in equipment and technology resources.

The present Uncrewed Aerial Systems equipment inventory will meet the needs for the first certificate cohort of 12 students. This list includes both classroom and lab expectations for equipment and software. As the program grows, the budget will need to reflect that growth. Additionally, as FAA standards and safety requirements are updated each year, equipment requests have been updated and purchased to maintain those standards.

5.5. Describe the institution's and proposed program's ability to meet institutional and programmatic accreditation standards, as applicable.

A. Specify Higher Learning Commission (HLC) requirements.

☐ Notification Only
☒ Approval Required
☐ None
☐ Other:

B. Is there an accrediting or professional organization that has established standards for the program?

☐ Yes
☒ No

C. If yes: Describe the ability of the proposed program to meet professional accreditation standards. If the program does not or cannot meet those standards, describe the area(s) in which it is deficient and indicate steps needed to qualify the program for accreditation. Provide the date by which the program would be expected to be fully accredited.

If the institution does not plan to seek specialized accreditation, provide a rationale for not seeking.

Although an accreditation process does not presently exist for Uncrewed Aerial Systems curriculums, the Federal Aviation Administration is currently creating policies and procedures to establish expectations for well-designed, student-centered programs. As those policies evolve nationally, the Uncrewed Aerial Systems LATC Advisory Board and faculty will be generating a certificate handbook which follows those guidelines, along with best-practice suggestions from industry leaders. Due the to evolving nature of drone technologies, technical, ethical and safety practices will be closely monitored and incorporated appropriately.

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

Lake Area Technical College
Uncrewed Aerial Systems (Drone) 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*

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)

SOURCE:
DATE:

NOTES:

Due to the nature of this emerging industry, the Department of Labor Statistics on the occupation associated with CIP Code 36.0202 – Remote Aircraft Pilot (Personal) is unavailable at this time. However, employment data for industries which are expecting drone training, expertise and licenses in many of their future employees is extensive and reveals a rapidly expanding need for uncrewed aerial systems certifications. A complete listing of this data is included in the Certificate Application (Microsoft Word). We will highlight four of the industries in the chart above.

Further, demand for UAS applications in construction, agriculture, insurance, and energy, according to industry stakeholders, may experience tenfold growth over the next five years. Demand for civil UAS applications such as law enforcement, first responders, and governmental survey operations also continues to grow as the technology has developed. U.S. companies have leading positions in UAS analytics, service offerings, and software systems. Barclays forecasts the global commercial UAS market will grow tenfold in just 5 years, from $4 billion to $40 billion. The Teal Group estimates the civil UAS market is expected to reach over $88 billion over the next ten years. [1] Barclays estimates that the gained efficiency of replacing certain specific manned operations with UAS will result in cost savings of approximately $100 billion. [2]

[1] Patrick McGee, "How the commercial drone market became big business," Financial Times, 26 November 2019, https://www.ft.com/content/cbd0d81a-0d40-11ea-bb52-34c8d9dc6d84.

[2] Philip Finnegan, "World Civil Unmanned Aerial Systems: Market Profile & Forecast," Teal Group, 2018.

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
Appendix 2.B: Student Demand Projections

Lake Area Technical College
Uncrewed Aerial Systems (Drone) Certificate

	YEAR 1	YEAR 2	YEAR 3
Student Full-Time Equivalent (FTE)	**7**	**7**	**11**
Headcount: Full-Time			
Headcount: Part-Time	12	12	18
Headcount: Total	**12**	**12**	**18**
Total Program or Site Capacity	12	12	18

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

Lake Area Technical College
Uncrewed Aerial Systems (Drone) Certificate

MONTHS:	9
SEMESTERS:	2
TOTAL CREDITS:	18

PREFIX AND NUMBER	TITLE	CREDITS	DESCRIPTION	EXISTING COURSE
I. GENERAL EDUCATION CORE				
SUBTOTAL OF GENERAL EDUCATION CREDITS:		**0**	**TOTAL NEW COURSES:**	**0**
II. PROGRAM CORE				
FLT 102	Introduction to Unmanned Aerial Systems	3	In this Intro to sUAS course, students will learn the basics of flying sUAS (drones) while discussing topics that will prepare students to take the FAA written Exam and become a certified FAA Part 107 Pilot. Students will learn to fly safely and legally, understand the UAS workforce and business models, while learning to get the most out of their drones. Topics covered in the course will include the history of drones, sUAS terminology, drones in the workplace, recreational vs. Part 107, and understanding the applicable sUAS rules, FAA regulations, and flight operations for a sUAS.	Y
FLT 132	Advanced Unmanned Aerial Systems	3	In this Advanced sUAS course, students will take a deeper look at sUAS systems while learning advanced topics that will prepare students to take the FAA written exam and become a certified FAA part 107 Pilot. Topics covered include national airspace systems, airport operations, reading sectional charts, weather, knowledge of systems such as PIX4D 3D mapping, photography, surveying, Ag systems, and evaluating data.	Y
UAS 102	Remote Sensing	3	This course explores various sensors and platforms for imagery and data collection. Participants will gain knowledge of fundamentals in electromagnetic radiation and the evolution of imagery collection methods. Through the utilization of concepts in remote sensing technologies, participants will develop an understanding of radar, LiDar, multispectral, hyperspectral, and infrared principles.	N
UAS 103	Introduction to GIS	3	This course introduces fundamental Geographic Information System (GIS) methods to enhance data visualization and spatial analysis skills. Students will receive hands-on experience with ArcGIS Pro, a leading GIS software. Through this practical approach, they will learn to explore data, visualize real-world attributes, conduct map analysis, and effectively communicate spatial information. The course aims to equip students with the essential tools and techniques for proficient GIS application in various contexts.	N
UAS 107	UAS Design and Construction	3	This advanced course provides participants with in-depth knowledge and hands-on experience in the design and construction of unmanned aerial systems (UAS). Participants will learn about the engineering principles and technical specifications required to build a functional UAS from the ground up. The course covers the design process, materials selection, fabrication techniques, and assembly procedures. Emphasis is placed on integrating various components to create a cohesive and efficient UAS.	N
UAS 210	UAS Workforce Development	3	This course provides adult professionals with an overview of enterprise UAS operations from a business standpoint. Key topics include UAS operational requirements, planning strategies, data processing software, adherence to U.S. rules and regulations, and addressing safety, security, and privacy issues. Participants will learn to specify UAS elements, such as selecting appropriate UAS and software, and planning projects and data for accuracy and mission success.	N

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

Lake Area Technical College
Uncrewed Aerial Systems (Drone) Certificate

SUBTOTAL OF PROGRAM CREDITS:	**18**	**TOTAL NEW COURSES:**	**4**

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
Appendix 4: Alignment Projection

Lake Area Technical College
Uncrewed Aerial Systems (Drone) Certificate

TOTAL CREDITS IN PROPOSED PROGRAM:
18

I. STACKABLE OPPORTUNITIES							
PROGRAM NAME		Short-term Certificate		Existing	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?
NA		Long-term Certificate		Forthcoming			
		Diploma					
		AAS					
PROGRAM NAME		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					
PROGRAM NAME		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					
PROGRAM NAME		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?
NA			Forthcoming			
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			
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			

III. LICENSURE AND CERTIFICATION OPPORTUNITIES		
The PROPOSED PROGRAM will qualify students to pursue the following licensure and/or certification opportunities:		
Commercial Part 107	**Federal Aviation Administration**	Will the licensure/certification require reporting per SDCL 13-1-61?
		No
Recreational TRUST UAS Safety Test	**Federal Aviation Administration**	Will the licensure/certification require reporting per SDCL 13-1-61?
		No

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
Appendix 5: Financial Projections

Lake Area Technical College
Uncrewed Aerial Systems (Drone) Certificate

	YEAR 1	YEAR 2	YEAR 3
Student FTE	**7.2**	**7.2**	**10.8**
I. PROJECTED EXPENDITURES			
A. ONE-TIME			
New/Renovated Facilities	$ -	$ -	$ -
Equipment	$ 12,000.00	$ 15,000.00	$ 35,000.00
Other	$ -	$ -	$ -
Sub-Total: One-time	$ 12,000.00	$ 15,000.00	$ 35,000.00
B. RECURRING			
B.1. PERSONNEL			
FTE (Faculty and Staff)			
Salary & Benefits	$ -	$ -	$ -
B.2. OPERATING			
Rental / Lease	$ -	$ -	$ -
Contractual Services	$ 3,000.00	$ 3,000.00	$ 3,750.00
Equipment	$ -	$ -	$ -
Supplies	$ 2,000.00	$ 2,000.00	$ 2,600.00
Travel	$ 1,200.00	$ 1,200.00	$ 1,500.00
Other	$ -	$ -	$ -
Sub-Total: Operating	$ 6,200.00	$ 6,200.00	$ 7,850.00
Total: Recurring	**$ 6,200.00**	**$ 6,200.00**	**$ 7,850.00**
TOTAL EXPENDITURES (A + B)	**$ 18,200.00**	**$ 21,200.00**	**$ 42,850.00**
II. PROJECTED REVENUE			
Tuition	$ 26,784.00	$ 26,784.00	$ 40,176.00
State Fees	$ 9,072.00	$ 9,072.00	$ 13,608.00
Local Fees	$ 5,100.00	$ 5,100.00	$ 7,650.00
Location-Based Fees	$ -	$ -	$ -
State Sources	$ -	$ 46,221.55	$ 46,221.55
Federal Sources	$ -	$ -	$ -
Private Grants or Gifts	$ 12,000.00	$ 15,000.00	$ 35,000.00
Other	$ -	$ -	$ -
TOTAL REVENUE	**$ 52,956.00**	**$ 102,177.55**	**$ 142,655.55**
REVENUE - EXPENDITURES	**$ 34,756.00**	**$ 80,977.55**	**$ 99,805.55**

**Projections are held constant based on current fiscal year. Inflation or rate changes are not factored.*

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
Appendix 5: Financial Projections

Lake Area Technical College
Uncrewed Aerial Systems (Drone) Certificate
Notes:
Department Fees = $425 (Drone, mainteance parts, software)

Elite Unmanned
615 Kent St. Harrisburg SD 57032
605-759-6389
mikek@eliteunmanned.com
Eliteunmanned.com

South Dakota Board of Technical Education
800 Governors Drive

Pierre, SD 57501

Dear South Dakota Board of Technical Education Members,

I am writing you in support of the Lake Area Technical College Drone program. They have an outstanding UAS/Drone program that has been not only pushing what's possible in the higher education realm, but they also are providing education in the community's elementary education with their Drone Programming camps. I work in the industry as a sales and technology specialist to help develop UAS programs across the Midwest. I spend most of my time educating folks on the capabilities of robots and drones. Having this skill set is much sought after from several local industries ranging from agriculture to wind turbine and utilities. Every industry is adapting the technology to improve efficiency, reduce cost, and find a safer way to get the job done. The students graduating from Lake Area have a great advantage by being able to understand this and show employers how to utilize available technology. I believe if Lake Area Tech can grow this program, they will continue to stand out amongst schools that are beginning to understand the importance and advantage of this technology.

Best Regards,

Michael Klarenbeek

UAS SPECIALIST

Bowes Construction
Kesmond Willert, Marketing/ Public Relations
2915 22nd Ave.
Brookings, SD, 57006
K_willert@bowesconstruction.com
605.651.9796

South Dakota Board of Technical Education
800 Governors Drive
Pierre, SD 575436

South Dakota Board of Technical Education Members:

Bowes Construction Inc. based in Brookings South Dakota happily supports the request for "The Certificate of Drone Technology" degree by Lake Area Technical College.

I, Kesmond Willert the marketing representative for Bowes Construction Inc. understand the importance of drone technology in so many career fields and industries. This industry is growing, and individuals can utilize drone technology to start a career or be an asset within an organization. Drone technology can be utilized in many ways. In a construction company we utilize drone technology for a few different aspects. First off, drone technology is a great way for us to capture job progress, action shots of our equipment, and help us to provide arial pictures of finished work. We have found that clients enjoy seeing what work was done in an all-encompassing arial picture or video. Also, in a more technical sense with the evolution of drone technology, drones now can be utilized for land surveying aspects. Land surveying drones provide accurate measurements and can cut down the amount of time it takes to survey land if you were to use traditional equipment and methods.

Bowes Construction, values drone technology and has seen the technology have great effects for marketing as well as production. Our organization has looked at expanding our drone technology for future operations and projects. The options for drone technology are truly endless, and this industry will continue to grow. However, this industry can't grow if support for educational instruction doesn't take place. Please support Lake Area Tech's vision for a drone technology certificate, as this industry will only continue to grow and be utilized to revolutionize the way we market and survey in the construction industry.

Sincerely,

Kesmond Willert
Marketing/ Public Relations Rep.
Bowes Construction Inc.

July 31, 2024

North Haines Fire Department
Anthony Pritzkau, Senior Firefighter
1290 Country Road,
Rapid City, South Dakota 57701
Anthony.Pritzkau@state.sd.us
605-430-5832

South Dakota Board of Technical Education
800 Governors Drive
Pierre, SD 575436

South Dakota Board of Technical Education Members:

On behalf of the North Haines Fire Department, I would like to extend our support of Lake Area Technical College's development of a certificate of Uncrewed Aerial Systems.
Unmanned aerial aircraft (drones) are increasingly becoming an integral component of modern public safety operations and have proven to be a valuable tool for first responders. The use of drones for reconnaissance and information gathering procedures has emerged throughout many different areas of the fire service. In wildland fire fighting operations, drones provide a safer alternative to scout smoke or hotspots in rough terrain in place of a hand crew reducing injury and offering a cost-effective practical application. With large building structures, quick and effective drone deployment allow a real-time accurate damage assessment to aid in resource assignment. Search and rescue operations have benefited largely from drones and pilots in locating lost, injured, or otherwise ailing people in compromising situations where quick response is imperative. Lastly, in severe weather drones can aid in storm assessment with fallen power lines, bridge damage, downed trees, or other high-risk areas.

Expanding an educational opportunity to develop potential drone pilots with experience, knowledge, and capabilities is an exciting advancement in our field. The future of drones in public safety has gained considerable momentum and is continuing to grow at a rapid pace. This growth comes with an increasing need for drone pilots with a specific skill set to handle the increasingly complex missions so education in drone technologies will be an inestimable boon for drone pilots looking to enter the industry.

Sincerely,

Tony Pritzkau

Anthony Pritzkau

CITY OF PIERRE
FIRE DEPARTMENT

MEMORANDUM

TO: South Dakota Board of Technical Education

FROM: Ian Paul, Pierre Fire Chief
Ian.paul@ci.pierre.sd.us

DATE: July 29, 2024

SUBJECT: Uncrewed Aerial Systems

On behalf of the Pierre Fire Department, I would like to submit this letter of support to Lake Area Technical College's proposed development a certificate program of Uncrewed Aerial Systems.

Unmanned aerial aircraft (drones) are increasingly becoming more common for use in public safety operations and have proven to be a valuable tool for first responders. Central Hughes County currently has an established and organized drone team with three Part 107 certificate holders. This drone team is managed through the Hughes County Emergency Management Office and consists of members from fire department, law enforcement, and emergency management agencies. We have used our drones for multiple missions to include search and rescue operations and structure fire damage assessment.

As this technology continues to grow, the need for educational opportunities will grow with it. Expanding an educational opportunity to develop potential drone pilots with experience, knowledge, and capabilities is an exciting advancement in our field.

MILLS PROPERTY MANAGEMENT

South Dakota Board of Technical Education
800 Governors Drive
Pierre, SD 57501

Dear Members of the South Dakota Board of Technical Education,

On behalf of Mills Property Management based in Brookings, South Dakota, I am pleased to express support for Lake Area Technical College's proposal to establish "The UAS Certificate Program."

As the Chief Operations Officer overseeing the marketing team of Mills Property Management, I recognize the growing significance of drone technology across various career fields and industries. The advancement of this technology opens numerous opportunities for individuals to start new careers or enhance their roles within organizations. For instance, in our own real estate operations, drones have proven helpful for providing prospects an opportunity to experience property specifications virtually.

At Mills Property Management, we have witnessed firsthand the positive impact of drone technology for marketing our residential and commercial properties we manage We fully endorse Lake Area Tech's vision for a UAS Certificate Program and urge your support for this initiative, which promises to advance the field and transform practices in various industries.

Thank you for considering our support for this important program.

Sincerely,

M. Elena McKeown

Elena McKeown
Chief Operations Officer
Mills Property Management

605-697-3175 ph | 605-697-3177 fax | 630 Western Ave | BROOKINGS, SD 57006 | www.millsproperty.com